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**A STUDY INTO FREQUENT INCIDENCE OF VEHICULAR ACCIDENTS IN
THE BIRIM CENTRAL MUNICIPALITY**



BY

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B.Sc. TECHNICAL EDUCATION



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Submitted to the School of Research and Graduate Studies, University of
Education, Winneba, in Partial Fulfilment of the Requirements for the Award of
Master of Technology (Mechanical) Education**

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DECLARATION

CANDIDATE'S DECLARATION

I, SALAM OPPONG APPIAH, declare that this thesis, with the exception of quotations and references contained in published works, which have all been identified and acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

Signature:..... Date:.....

SUPERVISOR'S DECLARATION

I hereby declare that the preparation of this thesis was supervised in accordance with the guidelines on supervision of thesis laid down by the University of Education, Winneba.

Supervisor: Mr S. K. Amoakohene

Signature:..... Date:.....

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DEDICATION

This thesis is dedicated to my niece Abigail Danquah.



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ABSTRACT

The study examines the performance of drivers in the Birim Central Municipality. The aim of the study is to assess the educational levels of the drivers and how it affects the performance of their work. The study would serve as a guide for stakeholders of road transport to ensure that the driving profession does not become a haven for illiterates. The research questions are therefore based on the educational levels of drivers in the Birim Central Municipality and how it affects their performance. The descriptive survey design was used for the study. The population consists of eighty (80) drivers, twenty (20) drivers' mates, fifty (50) car owners, fifty (50) vehicle mechanics (fitters), fifty (50) passengers of public transport, randomly selected, the municipal director of DVLA and a Chief Inspector of Police-MTTU. A set of questionnaires was prepared and used to collect data for the study. The data was analysed using Statistical Package for Social Sciences (SPSS v16). The study revealed that majority (56%) do not know the highway codes. It also revealed that a significant number (36%) are illiterate contributing to the frequent incidence of road accidents in the Municipality. The study also uncovered that almost 98% of all illiterate drivers are commercial drivers. Most importantly, more than half (57%) agreed that illiteracy causes road accidents. Based on the findings, it was recommended that the Driver and Vehicle Licensing Authority (DVLA) in collaboration of driving schools should establish an informal training centre to train prospective drivers effectively on the road signs, and traffic regulations before issuing them with driving license. Again, the DVLA should expand the driving tests to include new driver's behaviour during emergencies, and their hazard perception and also insist on literacy as part of requirements for the acquisition of driving licence. Moreover, Drivers should avoid driving at excessive speeds and reckless overtaking on the road and observe traffic regulations at all times.

CHAPTER ONE

INTRODUCTION

1.0 Background of the Study

The development of any nation rests greatly on the effectiveness of its transportation sector. Transportation in and around a community is critical to its development. In view of this stakeholders seek to remove bottlenecks in the sector. This has also led to the resort to various means of transport, mainly road transport, rail transport, air transport and water transport.

There are four main means of transport in Ghana. These include road, rail, water and air transports. The aviation industry in Ghana is becoming vibrant and it is expanding in terms of infrastructure, operations and services. An Airport Management Company has been established to focus on aerodrome infrastructure and operations. The Company is responsible for the planning, development, management and maintenance of all public airports and airstrips in the country. The aim of the sector is to promote a competitive, efficient, affordable and cost effective aviation sector, whilst ensuring safety and security standards as well as orderly growth of air transport in the country.

The total route length and track length of the rail network is 947 km and 1300 km respectively. It is limited to the southern part of Ghana within the Greater Accra, Central, Western, Eastern and Ashanti regions. Plans are underway to revamp the operations of the Ghana Railway Company Limited to make it more viable, and to attract private sector participation. Concession agreements have been signed by the Ghana Railway for the development and extension of the Eastern Line and the rehabilitation of the Western Corridor.

There are two main seaports in Ghana which are located in the southern coastal cities of Tema and Takoradi. There are a lot of programmes, such as container terminal project, that are being implemented to modernize these two ports to enable them to be more effective and efficient in their operations. The port services include vessel handling, stevedoring, shore handling, transit storage facilities and related services and cargo. Inland water transport includes the movement of passengers and cargo on rivers, lakes and other water bodies in the country.

The Volta Lake is the major inland water transport facility that is efficiently regulated by the Government to transport passengers and cargo. The main transport service provider on the Volta Lake is the Volta Lake Transport Company Limited (VLTC). The Ministry of Harbors and Railways and the Volta River Authority collectively have oversight responsibility over the Volta Lake Transport Company Limited (VLTC). Transport service on the Volta Lake is hampered by the perennial low water level as well as the presence of tree stumps and sand banks that impede the smooth movement of vessels and boats. Currently there is a program to remove the tree stumps, an activity which will make the lake more navigable and safe.

According to information from Statistical and Analytical Report, road transportation continues to be the most dominant and accessible mode of transport. In Ghana, the total road network as at the end of 2007 was 64,323 km (Essibey, G. (2011), *The Effects of Road Traffic Accidents on Economic Activities in Ghana: A case study of the Techiman township*). Road transport infrastructure can be used throughout to facilitate the exchange of commodities and enable regular school attendance and fast access to health facilities. Investment in this sub-sector therefore will directly contribute to poverty reduction.

However, according to World Health Organization, road traffic injuries caused an estimated 1.24 million deaths worldwide in the year 2010. In Ghana the picture is no different in the sense that valuable human resources are lost through fatalities and serious injuries resulting from road accidents. These casualties and traffic accidents in general are worrying.

The driving environment in the country is characterized by inefficient maintenance of vehicles, poor standards of driving, deplorable road network and a large fleet of over aged vehicles. This situation is further compounded by ineffective inspection of vehicles and ineffective enforcement of road traffic regulations and a sector that is inadequately resourced for road safety. Recently there has been an intensified campaign of road safety awareness all over the country. This however has not brought the needed panacea to the carnage that is prevalent on our roads.

It has therefore become necessary and obvious that the awareness created must be translated into safe road designs, enforceable road traffic regulations, more responsible road user behavior and a continuous research into road safety.

The management of road safety issues starts from vehicle design to medical treatment and death and this embraces several stakeholders. As a people road users and the general public should contribute in checking road traffic offences such as drink-driving, over-speeding, jumping the traffic light, overtaking in curves or at the brow of hills, and overtaking more than one vehicle at a time in particular and the performance of drivers in general, all of which result to making the roads a death trap.

(G. D. Zaney, Daily Graphic, 7 July 2006, P7)

In the Birim Central Municipality, road transport is the major means of transport. Workers are transported in and out of the central business sector of the municipality by means of taxis, minibuses, buses, private cars, etc. The only inland water transport

operates on the Birim River mainly to convey farmers. It must also be stated that the Eastern line of the Ghana Railway Company which government plans to revive used to operate in the municipality.

Considering the transport activities in the municipality, the contribution of road transport to its economic growth cannot be overemphasized. It is therefore prudent that the activities of drivers be monitored.

1.1 Statement of the Problem

In spite of the merits of an increased interest in stakeholder participation in reducing the rate of accidents on our roads, it is rather surprising that the situation leaves much to be desired. The Global burden of Disease study which was undertaken by the World Health Organization (W.H.O), Harvard university and the World Bank (cited in Arthur, 2011) showed that in 1990, traffic crashes were assessed to be the world's ninth most important health problem. The same study also forecasts that by the year 2020, road accidents would move up to third place in the table of leading causes of death and disability facing the world community. In the Birim Central municipality, many attempts have been made by the MTTU to curb the increasing trend of road accidents over the years.

In Ghana, the DVLA as part of measures to improve upon the efficiency of drivers has made the procedure for the acquisition of drivers' license more stringent. As part of these procedures prospective drivers seeking licenses are made to read driving manuals so as to be abreast with regulations regarding safe driving, eye test are also carried out on them, exams written, just to mention a few. But all these tests and exams do not yield any meaningful result. This is as a result of the practice of drivers to go every length to outwit the activities and procedures of the authorities and law

enforcers. It is for instance surprising to find a driver who has duly secured a drivers' license but cannot read. Interactions with some drivers reveal that some drivers have not had any formal education but manage to pass written exams to secure licenses. One would therefore wonder how such drivers would read notices beside roads. This among other reasons has contributed to the high rate of road accidents.

This forms a basis for justification for the 41st position of Ghana at the rate of 28.1 in the Road Traffic Accidents Death Rate per 100,000 out of 192 countries (W.H.O., 2011). In the light of this, there appears to be a lack of empirical research that links the educational level of drivers and their performance.

In view of this, the present study was undertaken to investigate and provide the link between the performance of drivers and their educational levels.

1.2 Purpose of the Study

The purpose of this study was to bring to bare the educational levels of drivers and how it influences their performance. The study therefore sought the level of education of various drivers in the Birim Central municipality and the perception of road users on the issue. Specifically, the study was designed to compare the rate of accidents of low educational levels and that of those with higher educational levels.

1.3 Research Questions

The following research questions guided the study.

1. How educated are drivers.
2. How efficient are drivers in the performance of their duty.
3. How the educational level of drivers affects their performance.

1.4 Significance of the Study

For many years stakeholders in road transport, most especially, road safety commission have been making frantic efforts to reduce the incidence of road accident to the barest minimum, but, there is gap in the literature as to whether the educational levels of drivers affects their performance or not. This shortfall in literature has necessitated this research. The research will inform drivers of the need to be educated in order to make them efficient. It will also provide policy makers with ideas of ensuring safety on our roads. Finally, for researchers in the road transport industry, the study can stimulate research by providing areas of further research.

1.5 Limitations of the Study

The sample may be very small in relation to the entire population due to financial and time constraints. The quality of responses also leaves much to be desired because of lack of co-operation from respondents and also the inability of them to read even after insisting that they are literates. Some of the questionnaires could not be retrieved from respondents due to civil strife. These factors therefore decreased the generalization of the findings.

1.6 Scope of the Study

The study will only be limited to the Birim Central Municipality. As such, findings and recommendations may not apply to municipalities with settings which are absolutely different from the Birim Central Municipality. However, for municipalities of similar setting findings and recommendations may be applicable. The study aims to seek the educational background of drivers and their level of efficiency. It further goes on to find the link between the two variables. The study was necessitated by a

keen interest of the researcher to determine whether the phenomenon whereby dropouts of formal basic education who can barely read take up the driving profession is not a cause for alarm.

1.7 Definition of Terms

FATALITY: Occurs when a person involved in a road traffic crash dies within thirty days of the crash and as a result of the crash.

FATALITY RATE: Refers to fatalities per 10,000 vehicles

POPULATION RISK: Refers to fatalities per 10,000 population

TRAFFIC ACCIDENT: Refers to accident in property damage, injury or death, and involves at least one vehicle on a public road.

CASUALTY: Refers to a person injured or killed in a traffic crash. Thus the accident is the event whilst the casualty is the individual crash victim.

FATAL ACCIDENT: Refers to an accident in which at least one casualty dies of injuries sustained within 30 days of occurrence.

SERIOUS INJURY ACCIDENT: Refers to an accident in which at least, one person is detained in hospital as in-patient for more than 24 hours.

MINOR/SLIGHT INJURY CRASH: Refers to an accident in which the most severe injury sustained does not lead to detention at the hospital.

DAMAGE-ONLY CRASH: Refers to an accident which results only in vehicle or other material damage.

DVLA: Driver and Vehicle Licensing Authority.

NRSC: National Road Safety Commission.

GPRTU: Ghana Private Road Transport Union.

GPS: Ghana Police Service.

GHA: Ghana Highways Authority.

BRRRI: Building and Road Research Institute.

DUR: Department of Urban Roads.

DFR: Department of Feeder Roads.

1.8 Organization of the Study

This report is comprised of five chapters. Chapter one deals with background to the study, the problem, research questions and the purpose of the study. Other aspects of the chapter are the significance, limitations and delimitations of the study. Also in Chapter One is the definition of terms.

Chapter Two focuses on the review of related literature while the methodology of the study is the subject of Chapter Three. The chapter on the methodology describes the research design, the population, sample and sampling procedures, data gathering instruments, pilot study and data collection procedures of the study. Also covered in the chapter are the variables of the study and the methods of data analysis. In Chapter Four, results and discussion of the findings are presented. Finally, the summary of findings, conclusions, recommendations and suggestions for further research form the concluding chapter of the report.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

In this chapter, the writer tries to review the related literature from published and unpublished books, internet, journals and other relevant information on the topic.

The following are the main headings discussed:

- Accidents
- Types of Accidents
- Causes of Accidents
- Effects of Accidents
- Vehicular Accidents
- Types of Vehicular Accidents
- Causes of Vehicular Accidents
- Effects of Vehicular accidents
- Prevention of Vehicular accidents
- The national road safety commission

2.1 Accident

The Health & Safety Executive (HSE) in UK defines an accident as “any unplanned event that results in injury or ill-health of people, or damage or a loss to property, plant, materials or the environment or a loss of a business opportunity”. An accident or mishap is also defined as an unforeseen and unplanned event or circumstance, often with lack of intention or necessity. It usually implies a generally negative outcome which may have been avoided or prevented had circumstances leading up to the accident been recognized, and acted upon, prior to its occurrence. Experts in the field of injury prevention avoid use of the term 'accident' to describe events that cause injury in an attempt to highlight the predictable and preventable nature of most

injuries. Such incidents are viewed from the perspective of epidemiology as predictable and preventable. Preferred words are more descriptive of the event itself, rather than of its unintended nature (e.g. collisions, drowning, fall, etc.). Accidents of particularly common types (crashing of automobiles, events causing fire, etc.) are investigated to identify how to avoid them in the future. This is sometimes called root cause analysis, but does not generally apply to accidents that cannot be deterministically predicted. A root cause of an uncommon and purely random accident may never be identified, and thus future similar accidents remain "accidental."

The Royal Society for the Prevention of Accidents of the United Kingdom defines an accident as any unforeseen, adverse event causing harm or having the potential to cause harm (Kiweteke 2009, p.13). From this definition, an accident is any hazard that can cause harm to people and equipment.

2.2 Types of Accidents

Accidents may be classified as physical or non-physical. Physical examples of accidents include unintended collisions or falls, being injured by touching something sharp, hot, or electrical, or ingesting poison. Non-physical examples are unintentionally revealing a secret or otherwise saying something incorrectly, forgetting an appointment, etc.

By activity Accidents during the execution of work or arising out of it are called work accidents. According to the International Labour Organization (ILO), more than 337 million accidents happen on the job each year, resulting, together with occupational diseases, in more than 2.3 million deaths annually. [1] In contrast, leisure - related accidents are mainly sports injuries. By vehicle; Bike accidents, Tram accidents, Traffic collisions, sailing ship accidents, Plane crash, etc.

2.3 Causes of Accidents

Out of every 100 accidents, 80 are the fault of the person involved in the incident.

Unsafe Acts cause four times as many accidents & injuries as unsafe conditions.

Accidents occur for many reasons. In most industries people tend to look for "things" to blame when an accident happens, because it's easier than looking for "root causes," such as those listed below.

An attitude is a disposition to respond favourably or unfavourably towards a person, thing, event, place, idea or a situation (attitudinal object) (Remple&Zanna, 1987, as cited in Wortman, Loftus & Marshall, 1992).

According to Wortman et al. (1992), attitudes, in other words, are the thoughts and feelings that encourage us to act as if we like or dislike something. Sometimes, people dismiss attitudes as unimportant, but attitude can be a matter of life or death. People's attitudes towards diet, exercise, drinking and smoking, using seatbelts and having safe sex affect how long and well they are fit to live.

Zimolong and Elke (2006) categorized the causes of accidents as:

- Unsafe Acts and Unsafe Condition; Overconfidence, Carelessness
- Inattentiveness
- Inexperience and Attitude

Most accidents happen because people commit active failures, which are called "unsafe acts". Not wearing safety glasses is one example. In terms of system safety, unsafe acts and unsafe conditions are substandard practices and substandard conditions, that is, deviation from an accepted standard or practice. A vast number of substandard conditions involve poor ergonomic design of machine, equipment and the work environment. Incidents usually start with relatively insignificant and common failures of design, operating and maintaining of equipment, with human errors or

degraded performance. In combination with circumstances and the reactions of equipment and people, hazards can be released and escalate to cause injuries or damage to environment and assets. The prevention of unsafe acts and conditions to minimize incidents will be quite troublesome if their systemic nature is overlooked. They are not random events, but logical and systematic consequences of psychological states. Examples are lack of attention, haste, inexperience, reasoning errors and misperceived risk. Psychological states are again not random events. They are caused by latent errors related to managerial and organizational failures and omissions; errors made long before the accident, and which have been present all the time. "Haste may be caused by any one of the following: too rigorous planning, a reward system that stresses speed, lack of personnel, frequent breakdown of equipment, a motivation to complete more than the normal portion of work, exceptional emergencies that had never been foreseen" (Wagenaar, Souverijn & Hudson, 1993, as cited in Zimolong & Elke, 2006).

Furthermore, accidents are caused by a combination of circumstances and events, usually resulting from unsafe work acts and an unsafe work environment or both.

Certain acts of people put them or others at risk or cause accidents. It has been estimated that unsafe personal acts cause as much as eighty percent (80%) of organizational accidents. Unsafe personal acts include such things as taking unnecessary risk, horseplay, failing to wear protective equipment, using improper tools and equipment and taking unsafe shortcuts, tiredness, increased rate of production (Lloyd & Rue, 1992).

Consider the underlying accident causes described. Taking Shortcuts; every day we make decisions we hope will make the job faster and more efficient. But do time savers ever risk your own safety, or that of other crew members? Short cuts that

reduce your safety on the job are not shortcuts, but an increased chance for injury.

Being over Confident: Confidence is a good thing. Overconfidence is too much of a good thing. "It will never happen to me" is an attitude that can lead to improper procedures, tools, or methods in your work. Any of these can lead to an injury.

Starting a task with incomplete instructions; to do the job safely and right the first time you need complete information. Have you ever seen a worker sent to do a job, having been given only a part of the job's instructions? Donot be shy about asking for explanations about work procedures and safety precautions. It isnot dumb to askquestions; it's dumb not to. Poor Housekeeping: When clients, managers or safety professionals walk through your work site, housekeeping is an accurate indicator of everyone's attitude about quality, production and safety. Poor housekeeping creates hazards of all types. A well maintained area sets a standard forothers to follow. Good housekeeping involves both pride and safety. Ignoring Safety Procedures; Purposely failing to observe safety procedures can endanger you and your co-workers. You are being paid to follow the company safetyolicies-not to make your own rules. Being casual about safety can lead to a casualty! Mental Distractions from Work: Having a bad day at home and worrying about it at work is a hazardous combination. Dropping your 'mental' guard can pull your focus away from safe work procedures. You can also be distracted when you're busy working and a friend comes by to talk while you are trying to work. The rate of accident is proportional to the number of extra hours.

Graham and Bennett (1992) attribute it to fatigue and partly to the fact that accidents occurs more often during night shifts.

Donot become a statistic because you took your eyes off the machine "just for a minute." Failure to Pre-Plan the Work: There is a lot of talk today about JobHazard Analysis. JHA's are an effective way to figure out the smartest ways to work safely

and effectively. Being hasty in starting a task or not thinking through the process can put you in harm's way. Instead, Plan Your Work and then Work Your Plan! "It is better to be careful 100 times than to get killed once." (MarkTwain, November 30, 1835)

2.4 Vehicular Accidents

A traffic collision, also known as a traffic accident, motor vehicle collision, motor vehicle accident, car accident, automobile accident, road traffic collision, wreck (USA), car crash, or car smash (Australian) occurs when a vehicle collides with another vehicle, pedestrian, animal, road debris, or other stationary obstruction, such as a tree or utility pole. Traffic collisions may result in injury, death, vehicle damage, and property damage. A number of factors contribute to the risk of collision, including vehicle design, speed of operation, road design, road environment, driver skill and/or impairment, and driver behaviour. Worldwide, motor vehicle collisions lead to death and disability as well as financial costs to both society and the individuals involved. The World Health Organization uses the term road traffic injury, while the U.S. Census Bureau uses the term motor vehicle accidents (MVA).

2.5 Types of Vehicular Accidents

Types of collision include head-on, road departure, rear-end, side collisions, and rollovers. Many different terms are commonly used to describe vehicle collisions.

2.5.1 Head-On Collision

A head-on collision is a traffic collision where the front ends of two vehicles such as cars, trains, ships or planes hit each other, as opposed to a side collision or rear-end

collision. Rail transport, a head-on collision often implies a collision on a single line railway. This usually means that at least one of the trains has passed a signal at danger, or that a signalman has made a major error. Head-on collisions may also occur at junctions, for similar reasons. With railways, the distance required for a train to stop is usually greater than the distance that can be sighted before the next blind curve, which is why signals and safe working systems are so important.

With sea transport, there are two main factors influencing the chance of a head-on collision. Firstly, even with radar and radio, it is difficult to tell what course the opposing ships are following. Secondly, big ships have so much momentum, that it is very hard to change course at the last moment.

With road transport, head-on collisions are an often fatal type of road traffic collision. U.S. statistics show that in 2005, head-on crashes were only 2.0% of all crashes, yet accounted for 10.1% of US fatal crashes. A common misconception is that this over-representation is because the relative velocity of vehicles traveling in opposite directions is high. While it is true (via Galilean relativity) that a head-on crash between two vehicles traveling at 50 mph is equivalent to a moving vehicle running into a stationary one at 100 mph, it is clear from basic Newtonian Physics that if the stationary vehicle is replaced with a solid wall or other stationary near-immovable object such as a bridge abutment, then the equivalent collision is one in which the moving vehicle is only traveling at 50 mph.

Head-on collisions, sideswipes, and run-off-road crashes all belong to a category of crashes called lane-departure or road-departure crashes. This is because they have similar causes, if different consequences. The driver of a vehicle fails to stay centered in their lane, and either leaves the roadway, or crosses the centerline, possibly

resulting in a head-on or sideswipe collision, or, if the vehicle avoids oncoming traffic, a run-off-road crash on the far side of the road.

Preventive measures include traffic signs and road surface markings to help guide drivers through curves, as well as separating opposing lanes of traffic with wide central reservation (or median) and median barriers to prevent crossover incidents. Median barriers are physical barriers between the lanes of traffic, such as concrete barriers or cable barriers. These are actually roadside hazards in their own right, but on high speed roads, the severity of a collision with a median barrier is usually lower than the severity of a head-on crash.

The European Road Assessment Programme's Road Protection Score (RPS) is based on a schedule of detailed road design elements that correspond to each of the four main crash types, including head-on collisions. The Head-on Crash element of the RPS measures how well traffic lanes are separated. Motorways generally have crash protection features in harmony with the high speeds allowed. The Star Rating results show that motorways generally score well with a typical 4-star rating even though their permitted speeds are the highest on the network. But results from Star Rating research in Britain, Germany, the Netherlands and Sweden have shown that there is a pressing need to find better median central reservation), run-off and junction protection at reasonable cost on single-carriageway roads.

Another form of head-on crash is the wrong-way entry crash, where a driver on a surface road turns onto an off-ramp from a motorway or freeway, instead of the on-ramp. They can also happen on divided arterials if a driver turns into the wrong side of the road. Considerable importance is placed on designing ramp terminals and intersections to prevent these incidents. This often takes the form of special signage at freeway off-ramps to discourage drivers from going the wrong way. The Manual on

Uniform Traffic Control Devices provides instruction on this signage installation in its Section 2E.50.

2.5.2 Sideswipe Collisions

Sideswipe collisions are where the sides of two vehicles traveling in opposite directions touch. They differ from head-on collisions only in that the errant vehicle impacts the side of the other vehicle rather than the front. Severity is usually lower than a head-on collision, since it tends to be a glancing blow rather than a direct impact. However, loss of control of either vehicle can have unpredictable effects and secondary crashes can dramatically increase the expected crash severity. Sideswipe collisions are frequently caused by a failure to control a vehicle.

2.5.3 Side Collisions

Side collisions are vehicle crashes where the side of one or more vehicles is impacted. These crashes often occur at intersections, in parking lots, when two vehicles pass on a multi-lane roadway.

Broadside collisions, known as right-angle collisions or T-bone collisions in the United States and Canada, are where the side of one vehicle is impacted by the front or rear of another vehicle, forming the "T". Vehicle damage and occupant injury are more likely to be severe, but severity varies based on the part of the vehicle that is struck, safety features present, the speeds of both vehicles, and vehicle weight and construction. When a vehicle is hit on the side by another vehicle, the crumple zones of the striking vehicle will absorb some of the kinetic energy of the collision. The crumple zones of the struck vehicle may also absorb some of the collision's energy, particularly if the vehicle is not struck on its passenger compartment. Both vehicles are

frequently turned from their original directions of travel. If the collision is severe, the struck vehicle may be spun or rolled over, potentially causing it to strike other vehicles, objects, or pedestrians.

After the collision, the involved vehicles may be stuck together by the folding of their parts around each other. An occupant on the struck side of a vehicle may sustain far more severe injuries than an otherwise similar front or rear collision crash. Side-impact airbags can protect vehicle occupants during side collisions, but they face the same limitations as other airbags. Additionally, side impact wrecks are more likely to involve multiple individual collisions or sudden speed changes before motion ceases. Since the airbag can only provide protection during the first collision, it may leave occupants unprotected during subsequent collisions in the crash. However, the first collision in a crash typically has the most severe forces, so an effective airbag provides maximum benefit during the most severe portion of a crash. Broadside collisions are frequently caused by a failure to yield right of way. In the case of collisions in an intersection, the cause is often a result of one vehicle failing to obey traffic signals (fail to stop or running past a red light). As with any crash, increased speed may increase crash severity.

2.5.4 Run-off-road Collision

A run-off-road collision is a type of single-vehicle collision that occurs when a vehicle leaves the roadway. Contributing factors often include loss of control or misjudging a curve, or attempting to avoid colliding with another road user or an animal. If the vehicle strikes a fixed object (an object that will move very little when struck, such as a tree, bridge structure or utility pole) or rolls over, the crash is likely to result in injuries or fatalities. 2005 statistics from the US show that run off

road crashes resulted in 31% of fatal crashes, but were only 16% of all crashes. Run-off-road collisions where the vehicle is sliding or spinning and runs roadside into a fixed obstacle are particularly dangerous, since the vehicle doors and sides provide less protection to occupants than the front of the car.

An important concept in understanding run-off-road crashes is the clear zone. This is the roadside area that is free from obstacles and dangerous slopes. Early research at the General Motors Proving Grounds found that 80% of their test drivers stopped or regained vehicle control within 30 feet (9 m) of the edge of the travel lane. As a result, civil engineers began to try to provide thirty feet of clear, flat ground next to rural highways. The result was fewer crashes. Current guidance adjusts the desired clear zone width for curvature, roadside slope, speed and volume. More width is recommended on the outsides of curves, where the ground slopes down away from the road, and on high speed, high volume roads.

There are several ways to reduce consequences of run-off-road collisions. They fall into three main categories: preventing run-off-road incidents, minimizing the likelihood of a crash or roll-over if the vehicle travels off the shoulder, and reducing the severity of those that do occur. Roadway cross section improvements Roadway cross section improvements include high friction overlays, improving curve banking, and widening shoulders or travel lanes. The intention is to help the driver to keep the car on the roadway. They are usually expensive unless included in a highway reconstruction project. A relatively inexpensive countermeasure is the placement of a Safety Edge — a 30° compacted taper on the edge of the pavement. This helps any driver that runs off the edge of the roadway to maintain control while trying to steer back onto the pavement. A vertical edge drop-off often results in overcorrection, leading to a head-on collision, rollover, or a run-off-road collision on the far side of

the road. Pavement edge drop-offs are problematic on roads where the hard shoulder is narrow or nonexistent. The safety edge adds about 1% to the pavement costs while building or resurfacing a road. Hazard removal or modification If possible, hazards should be removed, or modified to be less dangerous. Examples include tree removal, or extending cross culverts out of the clear zone. Where costs and right-of way allow it, this should be the first choice. However, many local roads have narrow rights of way, and clear zone improvements may require right-of-way takings or easements. This may not be cost-effective on low to medium volume rural roads. Guard rail is used to reduce the severity of run-off-road crashes by interposing a barrier that is more forgiving to vehicle occupants. It is important to note that guard rail is itself a hazard and should only be used where it shields traffic from a hazard that is more dangerous than it is. It may not reduce the number of run-off-road crashes, since it is longer and closer to the road than the hazard behind it. Properly designed and installed, it will reduce the severity of crashes that do occur. One study found that installing guard rail above an embankment would only reduce run-off-road crashes by only 7%. However, injury and fatal crashes were reduced by 45%. Delineation, where hazard removal and guardrail reduce the severity of run-off-road crashes, delineation aims to reduce the frequency of crashes by helping drivers stay on the road. It includes pavement markings, object markers, curve warning signs, delineators, and arrows and chevrons on curves. It is used where other improvements would be too costly or ineffective, as an interim method until other improvements can be installed, and to help drivers avoid collisions with guardrail. Signing improvements will generally reduce crashes by about 30%. Because of its low cost, delineation is often the measure of choice on lower volume roads. Some of these measures can also reduce the frequency and severity of head-on collisions. Median barriers are a form of guard

rail that turn head-on crashes into fixed object crashes. Curved delineation and cross-section improvements can reduce loss-of-control incidents.

Cost-effectiveness, since most roadway improvements are funded by taxes or user fees, it is important that safety improvements pay for themselves. On low speed, low volume local roads, expensive improvements are likely to produce less in savings than they cost, and thus divert scarce resources from locations where they could be better used. On high speed, high volume freeways, high quality clear zones are worth the cost.

2.5.5 Rollover

A rollover is a type of vehicle accident in which a vehicle tips over onto its side or roof. Vehicle rollovers are divided into two categories: tripped and untripped. Tripped rollovers are caused by forces from an external object, such as a curb or a collision with another vehicle. Untripped crashes are the result of steering input, speed, and friction with the ground. Untripped rollovers occur when cornering forces destabilize the vehicle. As a vehicle rounds a corner, three forces act on it: tire forces (the centripetal force), inertial effects (the centrifugal force), and gravity. The cornering forces from the tire push the vehicle towards the center of the curve. This force acts at ground level, below the center of mass. The force of inertia acts horizontally through the vehicle's center of mass away from the center of the turn. These two forces make the vehicle roll towards the outside of the curve. The force of the vehicle's weight acts downward through the center of mass in the opposite direction. When the tire and inertial forces are enough to overcome the force of gravity, the vehicle starts to turn over. The most common type of tripped rollovers occur when a vehicle is sliding sideways, and the tires strike a curb, dig into soft ground, or a similar event occurs that

results in a sudden increase lateral force. The physics are similar to cornering rollovers. Another type of tripped rollover occurs due to a collision with another vehicle or object. These occur when the collision causes the vehicle to become unstable, such as when a narrow object causes one side of the vehicle to accelerate upwards, but not the other. Turned down guard rail end sections have been shown to do this. A side impact can accelerate a vehicle sideways. The tires resist the change, and the coupled forces rotate the vehicle. In 1983, crash tests showed that light trucks were prone to rolling over after colliding with certain designs of guide rail. A rollover can also occur as a vehicle crosses a ditch or slope. Slopes steeper than 33% (one vertical unit rise or fall per three horizontal units) are called "critical slopes" because they can cause most vehicles to overturn. A vehicle may roll over for other reasons, such as when hitting a large obstacle with one of its wheels or when maneuvering over uneven terrain.

All vehicles are susceptible to rollovers to various extents. Generally, the higher the center of mass, the narrower the axle tracks, the more sensitive the steering, and the higher the speed the more likely are vehicles to roll over. The rollover threshold for passenger cars is over 1 g of lateral acceleration. Light trucks will roll over at lateral accelerations of 0.8 to 1.2 g. Large commercial trucks will roll at lateral accelerations as low as 0.2 g. Civilian SUVs and full-sized vans are notorious for rolling over because they usually have a higher center of gravity, caused by a higher ground clearance. Manufacturers often post warnings on the driver's sun-visor. The rollover tendency is exacerbated when the vehicles are heavily loaded. It is recommended to not load anything on the roof of such vans, and to use drivers experienced or trained in safe operation of the vehicle. In such cases, being familiar with the vehicle's behavior loaded and unloaded, avoiding sudden swerving maneuvers, and reducing speed

through tight turns can greatly decrease the rollover risk associated with these vehicles. Military vehicles have a much wider wheel track than civilian SUVs, making them more difficult to roll over.

After a rollover, the vehicle may end up lying on its side or roof, often blocking the doors and complicating the escape for the passengers. Large passenger vehicles such as buses, trams, and trolley buses that have doors on one side only usually have one or more methods of using windows for escape in case of a rollover. Some have special windows with handles to pull so that windows can be used as an emergency exit. Some have tools for breaking the windows and making an improvised exit. Some have emergency exits in their roofs. Some combine two or more of these escape methods.

Rollover crashes are particularly deadly for the occupants of a vehicle when compared to frontal, side, or rear crashes, because in normal passenger vehicles, the roof is likely to collapse in towards the occupants and cause severe head injuries. The use of roll cages in vehicles would make them much safer, but in most passenger vehicles their use would cut cargo and passenger space so much that their use is not practical. The Jeep Wrangler, a vehicle which is short, narrow, and designed to be used on uneven terrain, is unusual in that it comes with a roll bar as standard equipment. The decline in popularity of convertibles in the US was partly caused by concern about lack of protection in rollover accidents, because most convertibles have no protection beyond the windshield frame. Some convertibles provide rollover protection using two protruding curved bars behind the headrests. Some Mercedes-Benz convertibles have a retractable roll bar which deploys in case of an accident. Racecars almost always have roll cages, since racing is very likely to result in a rollover. In addition, the roll cage's chassis-stiffening effect is usually seen as a benefit to the car.

Several countries have a unique sign warning of curves and other areas with an increased danger of rollover for trucks and other high vehicles. These signs may include an advisory safe speed to avoid rolling over.

A skilled driver may stop a rollover by stopping a turn. Stunt drivers deliberately use ramps to launch a rollover. Vehicles with a high center of gravity are easily rolled.

2.6 Causes of Vehicular Accidents

K. Rumar, 1985 using British and American crash reports as data, found that 57% of crashes were due solely to driver factors, 27% to combined roadway and driver factors, 6% to combined vehicle and driver factors, 3% solely to roadway factors, 3% to combined roadway, driver, and vehicle factors, 2% solely to vehicle factors, and 1% to combined roadway and vehicle factors.

Human factors in vehicle collisions include all factors related to drivers and other road users that may contribute to a collision. Examples include driver behavior, visual and auditory acuity, decision-making ability, and reaction speed. A 1985 report based on British and American crash data found driver error, intoxication and other human factors contribute wholly or partly to about 93% of crashes. An RAC (automotive service company) survey of British drivers found that most thought they were better than average drivers; a contradictory result showing overconfidence in their abilities. Nearly all drivers who had been in a crash did not believe themselves to be at fault. One survey of drivers reported that they thought the key elements of good driving were: controlling a car including a good awareness of the car's size and capabilities reading and reacting to road conditions, weather, road signs and the environment alertness, reading and anticipating the behavior of other drivers. Although proficiency in these skills is taught and tested as part of the driving exam, a 'good' driver can still

be at a high risk of crashing because: An AXA (insurance company) survey concluded Irish drivers are very safety-conscious relative to other European drivers. However, this does not translate to significantly lower crash rates in Ireland. Accompanying changes to road designs have been wide-scale adoptions of rules of the road alongside law enforcement policies that included drink-driving laws, setting of speed limits, and speed enforcement systems such as speed cameras. Some countries' driving tests have been expanded to test a new driver's behavior during emergencies, and their hazard perception. There are demographic differences in crash rates. For example, although young people tend to have good reaction times, disproportionately more young male drivers feature in accidents, with researchers observing that many exhibit behaviors and attitudes to risk that can place them in more hazardous situations than other road users. This is reflected by actuaries when they set insurance rates for different age groups, partly based on their age, sex, and choice of vehicle. Older drivers with slower reactions might be expected to be involved in more accidents, but this has not been the case as they tend to drive less and, apparently, more cautiously. Attempts to impose traffic policies can be complicated by local circumstances and driver behavior. In 1969 Leeming warned that there is a balance to be struck when "improving" the safety of a road: Conversely, a location that does not look dangerous may have a high crash frequency. This is, in part, because if drivers perceive a location as hazardous, they take more care. Accidents may be more likely to happen when hazardous road or traffic conditions are not obvious at a glance, or where the conditions are too complicated for the limited human machine to perceive and react in the time and distance available. This fact can be used to improve safety, by putting up signs in accident-prone locations, like ones stated above. This phenomenon has been observed in risk compensation research, where the predicted reductions in accident rates have

not occurred after legislative or technical changes. One study observed that the introduction of improved brakes resulted in more aggressive driving, and another argued that compulsory seat belt laws have not been accompanied by a clearly attributed fall in overall fatalities.

Driver impairment describes factors that prevent the driver from driving at their normal level of skill. Common impairments include driving under the influence of alcohol. Abuse of alcohol while driving has become a profound recipe for accidents. Lang argues that driving, which he considers as a divided attention task, performance of this task is impaired as a result of the reduction in the ability to maintain continuous attention due to intoxication, which is caused by the intake of alcohol.

Insurance statistics demonstrate a notably higher incidence of accidents and fatalities among teenage and early twenty-aged drivers, with insurance rates reflecting this data. Teens and early twenty-aged drivers have the highest incidence of both accidents and fatalities among all driving age groups. This was observed to be true well before the advent of mobile phones. Females in this age group suffer a somewhat lower accident and fatality rate than males but still well above the median across all age groups. Also within this group, the highest accident incidence rate occurs within the first year of licensed driving. Distraction; Research suggests that the driver's attention is affected by distracting sounds such as conversations and operating a mobile phone while driving. Recent research conducted by British scientists suggests that music can also have an effect; classical music is considered to be calming, yet too much could relax the driver to a condition of distraction. On the other hand, hard rock may encourage the driver to step on the acceleration pedal, thus creating a potentially dangerous situation on the road.

A 1985 US study showed that about 34% of serious crashes had contributing factors related to the roadway or its environment. Most of these crashes also involved a human factor. The road or environmental factor was either noted as making a significant contribution to the circumstances of the crash, or did not allow room to recover. In these circumstances it is frequently the driver who is blamed rather than the road. Research has shown that careful design and maintenance, with well-designed intersections, road surfaces, visibility and traffic control devices, can result in significant improvements in accident rates.

A well-designed and well-maintained vehicle, with good brakes, tires and well-adjusted suspension will be more controllable in an emergency and thus be better equipped to avoid collisions.

In Ghana, the Road Safety Management Services Limited asserts that, 10% of road accidents in Ghana are caused by drunk driving, while over speeding constitutes about 50% road accidents in the country. Other causes include disregard for traffic regulations by most drivers; non-existent road markings and signs; fatigue driving; unworthiness of some cars on our roads and among others.

2.7 Effects of Vehicular accidents

Worldwide it was estimated in 2004 that 1.2 million people were killed (2.2% of all deaths) and 50 million more were injured in motor vehicle collisions. India recorded 105,000 traffic deaths in a year, followed by China with over 96,000 deaths. This makes motor vehicle collisions the leading cause of injury death among children worldwide 10 – 19 years old (260,000 children die a year, 10 million are injured) and the sixth leading preventable cause of death in the United States (45,800 people died and 2.4 million were injured in 2005).

The world's first road traffic death involving a motor vehicle is alleged to have occurred on 31st August, 1869.

The global economic cost of MVCs was estimated at \$518 billion per year in 2003 with \$100 billion of that occurring in developing countries.

Ghana occupies the 41st position at the rate of 28.1 in the Road Traffic Accidents Death Rate per 100,000 out of 192 countries (W.H.O., 2011). According to Abagale et al (2013) road traffic accidents impose a substantial economic burden on victims, particularly the poor. They stress that this problem warrants immediate intervention. The annual mean cost of road traffic accidents to poor household was \$49, representing 183% of its annual income; this cost represents only 5% of the average income of a rich household.

2.8 Prevention of Vehicular accident

A large body of knowledge has been amassed on how to prevent car crashes, and reduce the severity of those that do occur. Owing to the global and massive scale of the issue, with predictions that by 2020 road traffic deaths and injuries will exceed HIV/AIDS as a burden of death and disability, the United Nations and its subsidiary bodies have passed resolutions and held conferences on the issue. The first United Nations General Assembly resolution and debate was in 2003[38] The World Day of Remembrance for Road Traffic Victims was declared in 2005. In 2009 the first high level ministerial conference on road safety was held in Moscow. The World Health Organization, a specialized agency of the United Nations Organization, in its Global Status Report on Road Safety 2009, states that over 90% of the world's fatalities on the roads occur in low- income and middle-income countries, which have only 48% of

the world's registered vehicles, and predicts that road traffic injuries will rise to become the fifth leading cause of death by 2030.

In Ghana the road traffic Act 683 of 2004 was enacted and gazette by the ministry of transport on 24 Jan 2005, to make drivers and other road users more responsible (ministry of Roads and Transport, road traffic Act, 2004 NRSC, Accra 2005). The ministry also launched the first 5-year Medium Term National Road safety strategy (2001-2005). It was aimed at creating framework for coordinated interventions in road safety. Again it was also intended to reverse the upward trend in traffic fatalities by 2005 and also to provide the basis for enhancing the safe use of roads in the country.

To prevent accidents, people must accept or be made to accept responsibility for their actions and must take obvious steps to eliminate hazards. (Who says accidents in Ghana are not preventable.pdf).

2.8.1 The national Road Safety Commission

The National Road Commission is an institution specially mandated to develop and promote road safety by setting standards to enhance safe vehicle handling throughout the length and breadth of the country. Significantly the NSRC has certain factors which are dominant in the cause of road accidents. These are driver error, faulty vehicles, nature of roads.

To curtail the frequent road accidents and provide a level of safety to the traveling public, the NRSS I was launched in 2001. This package included an outreach road user programmes in churches, mosques and public education on national television e.g. "Over to you" and "Drivers Academy".

There was also a training programme for over 3,000 teachers and about 10,000 school children and an uncountable number of parents all over Ghana. Additionally about

40,000 road safety was also printed. Government has also demonstrated a high of commitment towards the national road safety campaign with a diverse number of policy interventions and initiatives. Some of these were the improvement in human, technical and institutionalized frameworks and capacity for road safety management. Others were the enactment of a new Road Traffic Act 683, which has considerable provisions for road safety to replace the outdated Road Traffic Ordinance of 1952, the setting up of motor traffic courts and the donations of 40 ambulances to the Ghana Ambulance service.

An important achievement which was recorded under the NRS strategy is the creation of a high level of awareness of the socio-economic impact of road accidents both within the society and agencies responsible for safety, (YeboahAdoma Lucy, 7 June, 2006 P7).

The road transport agencies in the country have also identified forty locations in the network as being the most dangerous and deadly spots. This was the outcomes of a study by the road sector agencies to enable them take preventive actions to reduce road accidents. Some of the spots identified were Asiakwa and Protoaseon the Accra-Kumasi Highway, Asikuma-junction on the Atimpoku-Ho and Novewam on the Accra-Konongo Road. Others are Accra-Cape Coast and Accra-Aflao trunk Roads.

2.82. Pooling of Resources.

During the launching of the United Nations Global Road safety week in Ghana, on 23 April 2007, the ministries of interior and Transport agreed to pool their resources together, to reduce the current road fatalities. It was made known that road safety in the country has become a health issue, rubbing shoulders with major killer diseases like tuberculosis and malaria.

These ministries were focused to improve the safety week in Ghana, on 23 April 2007, the ministries of Interior and Transport agreed to pool their resources together, to reduce the current road fatalities. It was made known that road safety in the country has become a health issue, rubbing shoulders with killer diseases like tuberculosis and malaria.

These ministries were focused to improve the safety of children and young people, to cut-down drink-driving and over speeding. The minister for interior among other things stated that the roads in the country would experience the largest police patrol to enforce traffic regulations this year.

The chairman Of the NRSC urged policy makers to be part of the “ear-free day”. A day all car users would use public transport or non-motorized transport in order to experience the challenges of the motorized transports users. (Aziz Abdul, Daily Graphic, 24 April, 2007P 24).

2.8.3. NRSS I

The Ministry of Road and Transport and the National Safety Commission launched the first 5-year Medium Term National Road safety strategy (2001-2005). It was aimed at creating framework for coordinated interventions in road safety. Again it was also intended to reverse the upward trend in traffic fatalities by 2005 and also to provide the basic for enhancing the safe use of roads in the country.

In common with the overall African Road safety target of 20% reduction in road traffic totalities by 2010, the objective of the NRSSI was 5% reduction in road traffic totalities by 2005 and an additional 15 reduction by 2010, using 1998 as a base year.

The NRSS I comprised seven major stakeholders which were responsible for ensuring sanity on our roads. The stakeholders were the NRSC, BRRI, DVLA, MTTU, GPS,

GHA, DUR, and DFR. OTHER stakeholders, NGOs and individuals also significantly participated in the implementation process. The NRSSI ended in December 2005 and was subsequently evaluated in February 2006. The highlights of the successes and constraints which characteristics the implementation were noted.

2.8.3.1. Achievements

From an initial point of no resources, technical know-how and coordination, majority of the stakeholders are now equipped with operational departments, staff who have gained experience from pilot projects. Furthermore, the general funding and coordination among stakeholders, awareness and commitment to road safety within the road transport sector have proved.

2.8.3.2. Constraints

1. The major drawbacks discovered included the ineffectiveness of some stakeholders to mobilize the needed resources for road safety activities.
2. The pedestrians continuously suffered the major casualties in the country
3. Passengers of tooth buses and mini-buses formed the second largest groups of casualties.
4. The problem of monitoring and evaluating outputs, activities and overall objectives came about of inadequate performance indicators.
5. The constraints of relating the outputs and activities of the stakeholders to the overall objectives.
6. The absence of a National Vision for Road Safety.

2.8.4. Framework for NRSS II.

On May 23, 2003 the former Minister of Transport Dr. Richard Anane opened a two-day workshop on the development of the second phase NRSSII for the period 2006-2010 (YeboahAdoma 7 July 2006).

The under listed recommendations were made for consideration in the formulation of NRSS II.

- Development of a national vision
- Evaluation of a national road safety policy
- Designing creative stakeholder strategies for mobilizing resources for road safety.
- Transforming road safety into routine operations of stakeholders and no more ad-hoc project –based road safety activities.
- Establishment of an efficient accident data management system,
- An effective utilization of data to enhance future performance.
- Design of performance indicators
- Reinforcement of coordination, monitoring and evaluation within stakeholders.
- The achievement of the stakeholders must be specific, measurable, achievable realistic and time bound (SMART).
- Design a system for assessing the level of investment made in road safety management.
- Furthermore the NRSSII for 2006-2011 will comprise the following major factors.
 - a. The development of a national vision for road safety intended to articulate the current state of road safety in the country with the participation of all stakeholders. This is to ensure that all road users could visualize the long term ideal state of road safety Ghana.

- b. Formulating a measurable and a realistic objective will impart positively on road safety in the country in the mid-term period.
- c. All road safety activities will be targeted at reducing the level of fatalities among the pedestrians and occupants of buses and minibuses. This will also impart positively in other road user groups.
- d. Major contributory factors of road accidents to be identified and priorities as focus in the strategy.
- e. Agencies will be identified as key stakeholders in the strategy and will be required to implement specific actions.
- f. Resources will indicate the human, material, equipment and financial requirements by each stakeholder for the implementation of the strategy.

To enhance coordination in a constructive and focused direction during stakeholders' workshops on the 23 and 34 May 2006, discussion groups were constituted to present focus issues and come out with relevant suggestions to solve following lines.

- Vision and objectives for NRSSII
- THE ROAD USER, i.e. education, training and information
- The ROAD and its environment i.e. planning and engineering
- THE VEHICLE i.e. standards and roadworthiness
- REINFORCEMENT road user behaviour, vehicle and road standards
- INJURY MANAGEMENT i.e. first aid, emergency services etc.

2.8.5. Traffic Act 683, 2004

In the wake of the disturbing and discouraging wave of road traffic accidents and fatalities rocking the country, all agencies connected to improving the accident levels are viewing their action plans. It is in this direction that the road traffic Act 683 of

2004 was enacted and gazette by the (ministry of transport on 24 Jan 2005, to make drivers and other road users more responsible (ministry of roads and Transport, road traffic Act, 2004 NRSC, Accra 2005).

Some of the articles and sub-clauses which related to ensuring good maintenance and road worthiness of vehicles on the road are adopted.

2.8.6. Test of vehicles and issue of road use certificates

1. A vehicle used on a road shall be submitted for examination in accordance with this Act or regulations made under this Act.
2. Unless otherwise provided for under this Act in respect of cargo vehicle or any class of motor vehicles, this part applies to all vehicles used on a road.
3. The examination shall be conducted every six months in respect of commercial vehicles and once every year in respect of private vehicles or within the prescribed period and shall be conducted to determine that:
 - a. The vehicle conforms to the prescribe requirements relating to the construction and condition of the interior vehicle, its accessories and offer equipment and
 - b. The condition of the motor vehicle is such that its use on the road will not involve a danger of injury to any person or damage to property.

2.8.6.1. Vehicle Examination Centres

106. The Licensing authority may provide and maintain official vehicle examination centers as well as designate private testing stations where examination of motor vehicles may be carried out and the stations may provide and maintain the apparatus for carrying out the examinations

107. (1) A Person who

- a. Supplies or fits a motor vehicle part to a motor vehicle, or
- b. Causes or permits a motor vehicle part to be fitted to a motor vehicle, in such circumstances that the use of the motor vehicle on a road would by reason of that part being fitted to the motor vehicle, involve a danger or injury to any person or damage to property or constitute a contravention of, or failure to comply with any of the construction and use requirements, commits an offence and is liable on summary conviction to a fine not exceeding 250 penalty or to a term of imprisonment not exceeding 12 months or to both.

2.8.7. The Dvla Syllabus for Learner Driver

In the past most commercial vehicle drivers, were prepared by the prospective driver, serving as a driver's mate. The acquisition of the driving skill was largely by observing the manipulations and maneuvers of the driver, which was later practiced. The prospective driver then managed to secure a license. This was prospective and possibly a contributing factor to the bloody mess on the roads.

Until recently has not being any standard syllabus for the few driving schools in the country to use for their training. It is therefore timely and appropriate that the ministry of roads and transport through the DVLA has formulated the syllabi for training both the driver instructor and the learner driver. The syllabus requirement for maintenance and mechanical principles (module five) has been reproduced below:

2.8.7.1. Objectives

- a. Candidates should be able to know the common faults on a vehicle and how to rectify them.

- b. Vehicle maintenance for road worthy certificate examinations
- c. Knowledge of regular and periodic maintenance

2.8.7.2 Content

- a. Changing and balancing of tyres; changing of oil
- b. Common faults: battery, starter, clutch, brake
- c. Basic functions and maintenance requirements for;
 - Suspension system
 - Gear box
 - Axles
 - Shafts (proper shafts and universal joints, drive shaft and front wheel drive)
 - Carburetor
 - Exhausts
- d. Regular and periodic maintenance practices and their importance
- e. Vehicle emissions and air pollution. Effects on environment and human health.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

This chapter of the research discusses how the study was organized to obtain the necessary credible information so as to draw inferences among a cross-section of diverse opinions. The major features of this chapter are;

- i. Research design
- ii. Population
- iii. Sample and sampling procedures
- iv. Data collection techniques
- v. Instruments used
- vi. Methods of data analysis

3.2 Research Design

This study adopted descriptive method to gather the relevant data obtained from the research area. It was because the descriptive study seeks to gather information so that a description of what is going on can be made. This method may be designed to discover whether there is any relationship between two variables (Agyedu et al 2011). Therefore it was used to describe the nature of the situation as it stood during the research period.

3.3 Population

The population in this context refers to the drivers, drivers' mates, car owners, passengers, mechanics (fitters), various individuals and objects that have valuable information to give about the research.

The target population for this study was drawn from the Birim Central Municipality consisting of;

1. The Municipal Director DVLA (AkimOda)
2. Chief Inspector of Police (MTTU, AkimOda)
3. Eighty (80) drivers
4. Twenty (20) drivers' mates
5. Fifty (50) car owners
6. Fifty (50) vehicle mechanics (fitters)
7. Fifty (50) passengers

3.4. Sample and Sampling Procedures

The sample is drawn from the entire population in the study area. The sample size is how large or small the targeted population is. The sample size is part of the total population from which the research is carried out to determine the outcome for the whole population. The sample size for this study numbered Two hundred and fifty two (252), comprising eighty (80) drivers, twenty (20) drivers' mates, fifty (50) car owners, fifty (50) vehicle mechanics (fitters), fifty (50) passengers of public transport, the municipal director of DVLA and a Chief Inspector of Police-MTTU. The researcher is of the view that this sample size will isolate and eliminate irrelevant information which will not be helpful to the study. More importantly it will give a fair representation of the people's opinion on how the educational levels of these stakeholders affect their performance in the Birim Central Municipality.

The purposive sampling method was applied in the selection of the officials of DVLA and the MTTU division of the Ghana Police Service.

Since drivers, car owners and the other respondents are not staying in one town in the Birim Central Municipality, the researcher had to use random sampling method to capture the findings. It is also costly in terms of time and resources to study the whole population.

3.5. Data Collection Techniques

The researcher personally carried out the study. The researcher basically used questionnaires, unstructured interviews, visits and observations to collect the required data. This was because the drivers and car owners were busy during the day's work.

The visits and observations personally helped the researcher to gather the required data for the research. The researcher gave the respondents enough time of two weeks to complete the questionnaires; those who could not read were assisted by the researcher and his two assistants.

3.6. Instruments Used

The following measuring instruments were used in the study.

3.6.1. Questionnaires

The questionnaire seemed to be the most appropriate instrument from the number of instruments used for scoring the responses obtained from the respondents. Questionnaires were easy to administer, fast to score and therefore took relatively very little time of both the researcher and respondents. In all hundred (100) questionnaires were administered for respondents to answer. The questionnaires were

based on the research questions, literature review and the purpose of the study. They were very meaningful in the gathering of the independent views of the respondents. There were a total of 36 items in the questionnaire. The questionnaires were made up of close and open-ended questions (Appendix A). It consisted of dichotomous response, multiple choice, rating scale and ranking items.

3.6.2. Interview

Most of the respondents preferred interview to the questionnaire, the reason being their inability to read. For the unstructured interview, the researcher posed the questions and the responses were written down. In most cases the interview aimed at getting responses to questionnaire items.

3.6.3. Visits and Observations

Visits and observations at lorry parks and accident scenes were also used as instruments for gathering data from the research area. The researcher would most often perform interview after his observation depending on the nature of the accident.

3.7. Methods of Data Analysis

The data obtained from the respondents was analyzed using the Statistical Package for Social Sciences version (SPSS v 16). This was chosen for easy analysis and a better understanding of the study by interested parties.

CHAPTER FOUR: ANALYSIS OF RESULTS

4.1. Introduction

This chapter brings to bare the findings from the study collected from the questionnaires. The findings are categorised under themes which answer the objectives and the study's initial research questions. This chapter also highlights the socio demographic data of respondents and where necessary, cross-tabled with other variable to present variations and deeper insight into the phenomenon under study.

4.2 Demographic Interpretation of Results

The study highlights the socio-demographic characteristics of respondents involved in the survey. The results of the summary of the demographic characteristics of respondents are shown in table 1. The study sampled a total of 100 respondents from Birim Central Municipality. The study found out that, out of the 100 respondents who were sampled to respond to the questionnaires, 78 of them representing 78% were males whilst 22 representing 22% were females. This indicates that more males than females were selected for the study. This could imply that males are more engaged in driving and related jobs such as mechanics and vehicles mates than females.

In relation to respondent's age, it was revealed that most of the respondents were between 31 and 35 years since they form the highest percentage (27%) of the total respondents as indicated in table 1. However, the least number of respondents who were sampled were either 46 years and above since they have the least proportion of the respondents (5%). Respondents below 20 years and those within the age brackets 18-30 years and 26-30 years represented 10%, 7% and 10% respectively. It was also found out that 22% and 19% of the sampled population were 36 to 40 years and 41 to 45 years in that order.

Considering respondents marital status, it was revealed that most of the sampled population were married. From table 1, more than half of the respondents representing 64% were married whilst only 13% were single. This could indicate that vehicle owners prefer to give their vehicles to married men than the single since they are often seen as responsible and may take good care of the vehicle. This could also imply that married couples might have pulled resources together to secure the vehicle for their husbands to drive than the singles who are mostly dependents. However, table 1 indicates that, divorced or separated and widowed represent 9% and 14% of the respondents respectively.

Similarly, with respect to respondent's occupation, the study found out that most of the sampled population who took part in the survey were drivers whilst the least were driver's mates. Table 1 shows that, out of the targeted population, 60% were drivers whilst 10% were drivers mate. More drivers were purposefully selected since they are the fulcrum around which the reserve revolves. This is because drivers play a very vital role in the incidence of road accidents and per their line of duty, might have either directly or indirectly witness road accidents before. The least sampled population were driver's mates. Fewer mates were selected since they are allies to commercial drivers who might possess similar views on the phenomenon under study. Also, not only commercial drivers were involved in the study but also non-commercial drivers who do not naturally have mates. However, out of the total respondents who took part in the survey, 12% and 18% were mechanical engineers (fitters) and car owners in that order.

In relation to respondent's occupational experience, the study found out that most of the respondents have gained 21 to 25 years of experience in their field. Theses respondents constitutes 23% of the total sampled population. This could imply that,

the views of most of the population regarding the topic under investigation are real, in-depth and drawn from prolonged experience. However, the least respondents representing 11% had 6-10 years of occupational experience which indicates that fresher views were added to the study while shallow views were nearly eliminated. However, 17%, 18%, 12%, and 19% of the sampled population respectively had 1-5 years, 11-15 years, 19-20 years, and 26 years and above occupational experience. These indicate that nearly half (42%) of the sampled population had more than 20 years of occupational experience.

When investigating the educational level of respondents, the study found out that, most of the population who responded to the survey were illiterates or had no formal education whilst the least respondents had tertiary education. From table 1, it is clear that, 32% of the respondents were illiterates whilst only 1% had tertiary education. This could imply that formal education is not a prerequisite for driving vehicles in the country. Also, it could imply that more road or traffic regulations are not followed particularly the road signs since most drivers are illiterates which could obstruct drivers and cause frequent accidents. The next most represented category of respondents constituting 16% had basic or primary education. This indicates that more than half of the total population had basic education or less. This presupposes that more drivers in the study area do not truly understand the rationale of specific vehicle laws and obligations and may deliberately abuse them to cause road accidents. Similarly, 15%, 8%, 6% and 2% of the sampled population had Junior High, Senior High, technical, and vocational education respectively. This implies that, the educational level of respondents reduces significantly from one level to the next level which represents a typical education trend in Ghana. Fewer tertiary educated were involved since they are mostly engaged in white colour jobs.

Table1: Summary of the Demographic Characteristics of Respondents

Variable	Frequency	Percent (%)
Gender		
▪ Male	78	78
▪ Female	22	22
Age		
▪ Below 20 years	10	10
▪ 21-25 years	7	7
▪ 26-30 years	10	10
▪ 31-35 years	27	27
▪ 36-40 years	22	22
▪ 41-45 years	19	19
▪ 46 years and above	5	5
Marital Status		
▪ Married	64	64
▪ Single	13	13
▪ Divorced/Separated	9	9
▪ Widow	14	14
Occupation		
▪ Driver	60	60
▪ Drivers mate	10	10
▪ Mechanic	12	12
▪ Car Owners	18	18
Occupational Experience		
▪ 1-5 years	17	17
▪ 6-10 years	11	11
▪ 11-15 years	18	18
▪ 16-20 years	12	12
▪ 21-25 years	23	23
▪ 26 and above	19	19
Educational level		
▪ No formal Education	32	32
▪ Primary School	26	26
▪ JHS/JSS	15	15
▪ SHS/SSS	8	8
▪ Technical School	6	6
▪ Vocational School	2	2
▪ Tertiary	1	1
Possession of driving license		
▪ Yes	73	73
▪ No	27	27

Source; Field work, 2013

Lastly, with respect to possession of driving license, it was revealed that most of the respondents had driving licence which constitutes 73% whilst 27% did not possess one. This could imply that, most drivers in Birim Central Municipal are legitimate to drive vehicles. However, the fewer respondents who did not have drivers licence were either vehicle mechanics, driver's mates, or car owners who took part in the study and do not drive or it may be unscrupulous drivers who may bribe security personnel on the road.

Table 2: Educational Level of Drivers by Kind of Drivers

Educational Level	Kind of driver		Total
	Private	Commercial	
No formal education	1	30	31
Primary School	1	13	14
Junior High School/JSS/Middle	9	13	22
Senior High School/SSS	1	4	5
Technical/Vocational	2	0	2
Tertiary	10	1	11
Total	24	61	85

Source; field work, 2013

Table 3: Kinds of Drivers by their Ability to Read and Write

Kind of driver	Ability to read and write		Total
	Yes	No	
Private	23	1	24
Commercial	12	48	61
Total	35	49	85

Source; field work, 2013

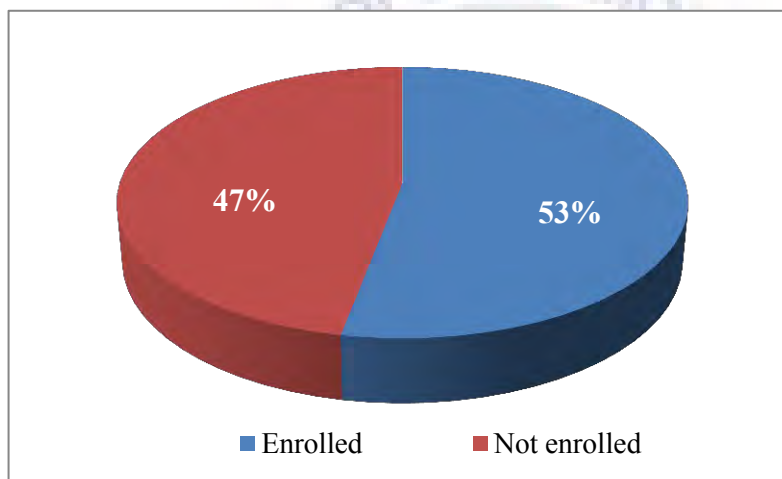


Figure 1: Enrolment in Non-formal Education

Source, field work, 2013

In assessing the educational level of drivers, respondents were also examined whether they attended a driving school for their driving lessons before applying for license. The result of this is indicated in table 4. The study found out that, less than half of the drivers attended driving school whilst majority did not. From table 4, 48.2% of the drivers had driving lessons from driving schools whilst 51.8% attended no driving institutions.

Table 4: Enrolment in Driving School/Institution

Attended driving School	Frequency	Percent (%)
Yes	41	48.2
No	44	51.8
Total	85	100

Source, field work, 2013

In assessing the educational level of drivers, respondents were also examined whether they attended a driving school for their driving lessons before applying for license. The result of this is indicated in table 4. The study found out that, less than half of the drivers attended driving school whilst majority did not. From table 4, 48.2% of the drivers had driving lessons from driving schools whilst 51.8% attended no driving institutions.

Table 5: Graduation from Driving School

Graduants	Frequency	Percent (%)
Yes	25	61
No	20	39
Total	41	100

Source, field work, 2013

The study revealed that out of 41 drivers who attended driving school, 25 of them representing 61% graduated successfully whilst 20 of them constituting 39% did not graduate.

Table 6: Driver’s Knowledge in Highway Codes by their ability to read and apply them

Knowledge in highwaycodes	Ability to read and apply them			
	Strongly agree	Agree	Disagree	Strongly disagree
Yes	12	20	4	1
37				
No	6	6	21	13
48				
Total	18	26	25	14
85				

Source; field work, 2013

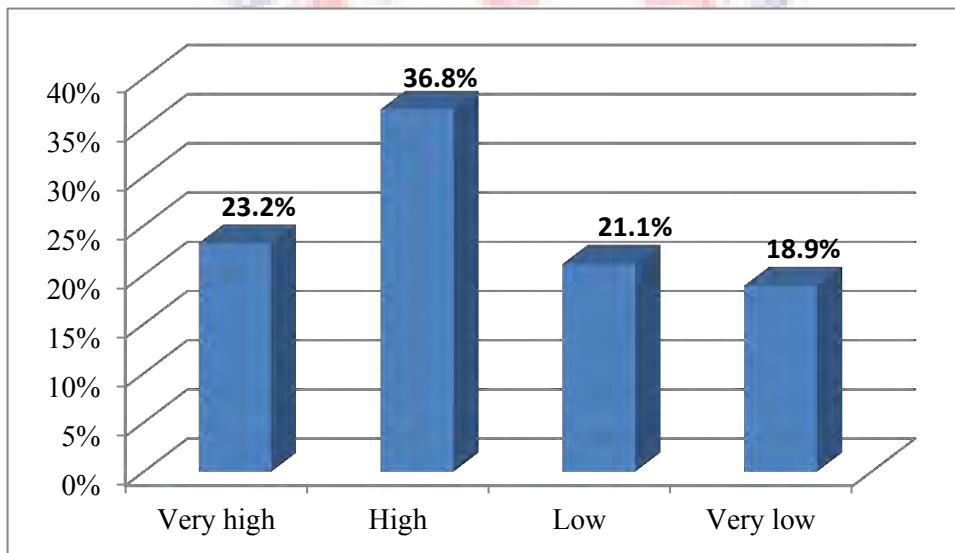


Figure 2: Level of Drivers’ Knowledge in Road Signs, Symbols, and Legal Obligations

Source; field work, 2013

4.4 Efficiency of Drivers in the Performance of their Duties

The study also examined the efficiency of drivers in the performance of their duty.

Efficiency of drivers were measured using their ability to conduct daily vehicle check-

up before igniting their engines for use; in ensuring routine maintenance; and renewals of vehicle papers and driver's license. In examining this, the kind of drivers and the type of vehicle used were investigated and presented in table 7. It was revealed that a total of 57 drivers responded to the question of which 24 are private drivers and 33 commercial drivers. Also, it was found out that the types of vehicles used in Birim Central Municipality include cars, buses and trucks which are driven by 33, 13 and 11 drivers in that order. This indicates that, cars are the most frequently used vehicle in the study area than buses and trucks. From table 7, more private drivers use cars than commercial drivers whilst only commercial drivers drive buses. It was also found out that, majority of the truck drivers are private drivers.

Table 7: Kind of Drivers by the Type of Vehicles used

Kinds of driver	Type of vehicle used			Total
	Car	Bus	Truck	
Private	21	0	3	24
Commercial	12	13	8	33
Total	33	13	11	57

Source; field work, 2013

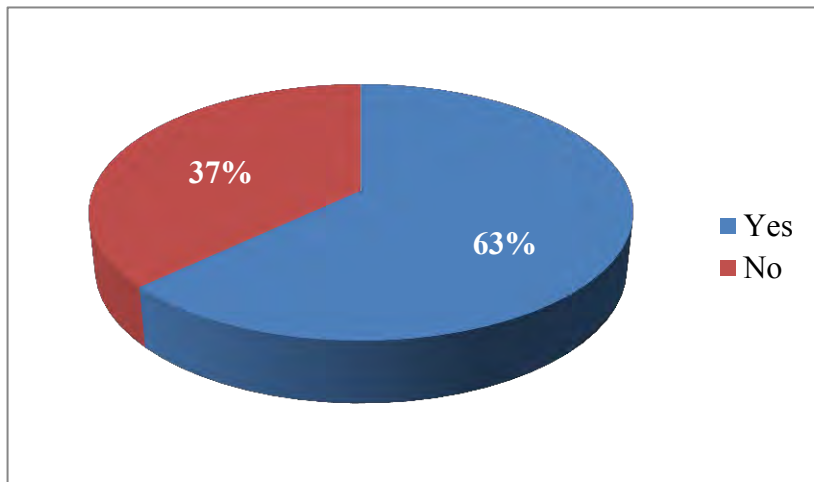


Figure 3: Conduct of Consistent Vehicle Check-up before Usage

Source; field work, 2013

Table 8: Reasons why some Drivers do not Conduct Frequent Vehicular Checks

Reasons	Frequency	Percent (%)
Lateness to work	15	40.5
Ignorance	9	24.3
Laziness	8	21.6
Other	5	13.5
Total	37	100

Source, field work, 2013

Similarly, respondents were assessed on their efficiency in maintaining their vehicles by visiting the mechanic shop which is shown in table 9.

Table 9: Routine Maintenance of Vehicles

Kind of vehicle	Time of maintenance			Total
	Daily	Weekly	Monthly	
Brand new	0	1	9	10
Home used	1	9	59	69
Total	1	10	68	79

Source; field work, 2013

The study revealed that, a total of 79 drivers responded to this question. It was found out that, visiting the mechanic shop for routine maintenance is determined by the type of vehicle in question. From table 9, it is evident that, 10 out of the 79 drivers use brand new vehicles whilst 69 of them use home used vehicles.

Table 10: Frequency of Vehicle Breakdown by Age of Vehicle in a Year

Age of vehicle	Frequency of vehicles breakdown on the road				Total
	1-5 times	6-10 times	11-15 times	16-20 times	
1-5years	16	16	5	0	37
6-10 years	12	15	5	1	33
11-15 years	0	6	4	0	10
Total	28	37	68	1	80

Source; field work, 2013

The study revealed whether accidents occur as a result of vehicle breakdown on the road whose results are displayed in figure 4. It is evident that more than half of the vehicle breakdown results into accidents per figure 4. It is evident that 59.5% of the vehicle breakage results into accidents whilst 39.3% do not.

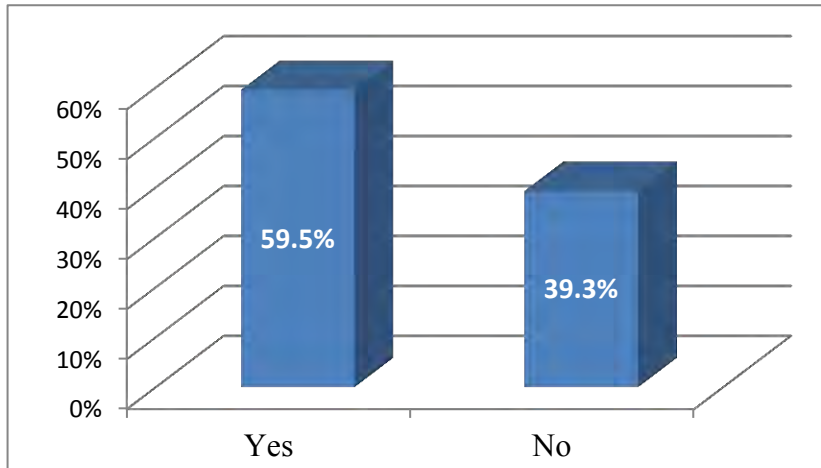


Figure 4: Drivers Involvement in Road Accidents when Vehicles Breakdown

Source, field work, 2013

Table 11: Renewal of Vehicle Papers and Driver's License

Time of renewal	Frequency	Percent (%)
Before the deadline	22	27.5
On the day of deadline	33	41.25
After the deadline	80	31.25
Total	80	100

Source, field work, 2013

Table 12: Major Causes of Road Accidents

Causes of road accident (%)	Frequency	Percent
Attitude of drivers, road users and vehicle owners	57	57
Illiteracy	9	9
Bad nature of roads	17	17
Bad condition of vehicle	11	11
Other	5	5
Total	100	100

Source, field work, 2013

The major causes of road accidents per the views of respondents in the study area includes attitude of drivers, road users and vehicle owners, illiteracy, bad nature of roads, and bad condition of vehicles among others. From table 13, it was found out that, the attitude of drivers, road users and vehicle owners is the major cause of road accidents in the Birim Central Municipal which account for 57% of road accidents.

Table 13: The Extent to which Illiteracy Affects Incidence of Road Accidents

Does illiteracy causes accidents	Frequency	Percent (%)
Yes	56	56
No	44	44
Total	100	100

Source, field work, 2013

Table 14: Kind of Drivers and the number of fatal Accidents Encountered

Type of driver	Number of fatal accidents involved			
	None	One	Two	
Total				
Private	10	3	0	13
Commercial	23	13	6	42
Total	33	16	6	55

Source; field work, 2013



CHAPTER FIVE: DISCUSSION

5.1 Introduction

This chapter discusses the results in chapter four and their implications. It compares and contrasts the findings to the literature. The chapter also gives an account of circumstances that could have led to unexpected findings.

5.2 Educational Levels of Drivers with Regards to Literacy

The study assessed the educational levels of drivers with regards to their literacy level. To facilitate this, drivers who were involved in the study were selected and grouped into categories as shown in table 2. From table 2, out of the 100 respondents who were sampled for the study, 85 were drivers comprising 24 non-commercial and 61 commercial drivers. The study found out that, majority of the drivers particularly commercial drivers had no formal education. From table 2, 31 drivers had no formal education out of which 30 are commercial drivers. This indicates that nearly half of the commercial drivers who took part in the survey were illiterate which have serious implication on the frequency of road accidents. Reason being that, illiterate drivers might not be aware of faulty indications that may appear on their dashboards, road signs and road markings which could offset driving and lead to vehicle breakdown and preventable accidents. Table 2 also shows that 14 drivers ended their formal education at the primary school which includes 13 commercial drivers and a non-commercial driver. Drivers who have only primary education are considered semi-illiterates and might not be able to decipher traffic regulations as to when and how to they apply. Again, the study revealed that, 22 drivers comprising 9 private and 13 commercial drivers had attained Junior High or Middle school education. However, it is indicated that only few drivers had attained Senior High and technical/vocational education. Table 2 reveals that, 5 drivers composing a private driver and 4

commercial drivers had Senior High education whilst only 2 drivers who are all private vehicle drivers had technical or vocational education. Surprisingly, the study found out that 11 drivers have had tertiary education composing 10 private and a commercial driver. These indicate that, most private drivers are learned and might apply traffic regulations thoroughly than their commercial counterparts who might misapply them to cause possible accidents. In other words, the educational level of private drivers is higher than commercial drivers which reduce significantly from primary to tertiary levels.

Upon further probe, private and commercial drivers who took part in the survey were examined on their ability in reading and writing which is shown in table 3. From table 3, 35 drivers can read out of which almost twice as much as the number of commercial drivers are private drivers who can read and write. The study found out that out of the 35 drivers who can read and write; 23 were non-commercial drivers whilst 12 were commercial drivers. However, it was revealed that almost all of the drivers who cannot read and write are commercial drivers. From table 3, 49 drivers cannot read and write comprising 48 commercial drivers and only a private driver. This buttresses the fact that, private drivers are highly educated than commercial drivers. Reason being that out of the 24 private drivers who were sampled for the study, 23 of them can read and write against 12 out of the 61 commercial drivers.

5.3 Kinds of Drivers by their Ability to Read and Write

Upon further deliberation, drivers who were unable to read and write were examined if they have plans of registering or had registered with any non-formal education. The result of this is presented in figure 1. The study revealed that, most illiterate drivers

representing 53% have plans to enroll in an adult education whilst 47% reported otherwise and had no intentions of enrolling later in life.

5.3.1 Enrolment in Driving School

The study found out that, less than half of the drivers attended driving school whilst majority did not. From table 4, 48.2% of the drivers had driving lessons from driving schools whilst 51.8% attended no driving institutions. This indicates that, majority of the drivers in Birim Central Municipality learned driving from unscrupulous or informal persons such as friends, family members and commercial drivers who might not have in-depth knowledge in both practical and theoretical aspects of driving. This could imply that, most drivers might have acquired erroneous ideas about driving, vehicle examination, traffic regulations and road signs which could contribute to reckless driving and road accidents.

5.3.2 Graduation from Driving School

In assessing the educational level of drivers, respondents were also examined whether they attended a driving school for their driving lessons before applying for license. The result of this is indicated in table 4. The study found out that, less than half of the drivers attended driving school whilst majority did not. From table 4, 48.2% of the drivers had driving lessons from driving schools whilst 51.8% attended no driving institutions.

However, further probe revealed whether drivers who attended driving lessons from recognised driving institutions completed their lessons or graduated as indicated in table 5. The study revealed that out of 41 drivers who attended driving school, 25 of them representing 61% graduated successfully whilst 20 of them constituting 39% did

not graduate. This indicates that these drivers might have obtained their drivers license from dubious means which could have future implications on the rate of vehicular accidents in Birim Central municipality.

5.4 Driver's Knowledge in Highway Codes by their ability to read and apply them

The study highlights the level of driver's knowledge on high way code and their ability to read and apply them. This is presented in table 6. From table 6, it is indicated that among the 85 drivers who were sampled for the study, 37 of them are conversant in the highway codes whilst 48 constituting the majority do not know the highway codes. This indicates that most of the drivers in the study area drive recklessly since they don't know the highway codes which could trigger road accident. However, 5 of the respondents who claimed knew the highway codes cannot read and apply them.

5.5 Level of Drivers' Knowledge in Road Signs, Symbols, and Legal Obligations

Again, respondents were examined on their level of knowledge in road signs, markings, and legal obligations which is indicated in figure 2. From figure 2, it is indicated that, 23.2% of the drivers have very high knowledge in road signs and legal obligations whilst most of them constituting 36.8% have high knowledge in road signs and legal obligations. However, the study revealed that 21.1% and 18.9% have low and very low knowledge in road signs and legal obligations respectively. It can be inferred that 40% of the drivers have less knowledge in road signs, markings, and legal obligations and may sometimes skip them which is a possible treat to other road users.

5.6 Conduct of Consistent Vehicle Check-up before Usage

Further probe indicates how efficient drivers perform their duty with respect to servicing of vehicles. This is due to the fact that, routine vehicle maintenance partly determines the quality and efficiency of a driver. The results of the study as shown in figure 3 revealed that more than half of the drivers conduct regular vehicle check-up before igniting the engines although a significant percentage of them do not. From figure 3, 63% of the drivers maintain this culture whilst 37% reported otherwise.

This indicates that a significant proportion of the drivers do not check their engine oil, brake fluid, water, tire pressure, and other preliminary check such as leakage from engines and position of mirrors. Upon further deliberation, respondents who did not conduct consistent vehicle check-up before starting their engines were asked for the rationale for their inactions which is presented in table 8.

The study found out that, most of the drivers don't check their vehicles before usage due to lateness to work. From table 8, 40.5% of both commercial and non-commercial drivers who are late for work often skip preliminary vehicular checks to catch up time. Also, 24.3% of the drivers who do not check their vehicles before usage claimed it is due to ignorance. This category of drivers may be illiterates and as such might not know that it is necessary to conduct daily or regular vehicle checks before starting their engines for use to avoid break down on the road which could cause road accidents. However, it was found out that, 21.6% of the drivers are aware of the significance of regular vehicular checks but laziness prevents them from doing so. Such drivers may feel reluctant to check their vehicles due to tiredness, stress from work and boredom from home. Besides, table 8 indicates that, 13.5% of the drivers reported other reasons for their inactions. These drivers claimed that, their vehicle were bought recently and hardly will it be faulty, whilst others claimed that, their

vehicles do not give them problems since they maintain it and therefore do not need daily checks. Also, some of them reported that they have stopped checking their vehicles since always when they check they don't find any fault but achieve the same results.

5.7 Routine Maintenance of Vehicles

Table 9 indicates that only few people are economically stable in the study area to afford brand new cars. Also, drivers who drive used cars undertake more daily, weekly and monthly vehicular maintenance than those who use brand new vehicles. This could imply that brand new vehicles do not need regular servicing.

In furtherance, based on the duration of vehicular maintenance and the conduct of regular vehicle inspection before starting engines for use, drivers were assessed if they encounter vehicular breakdown on the road and how frequent do they occur within a year. Table 10 presents the frequency of vehicular breakdown on the road. This was paired with the age of the vehicle in order to find out if the age of vehicle is a precursor for vehicle breakdown. The study revealed that, almost all drivers experience vehicle breakdown irrespective of the kind of car and whether they were bought brand new or used. This is because from table 10, out of 81 drivers who participated in the survey, 80 of them experience vehicular breakdown on the road within a year. It was found out that most of the drivers vehicles breakdown about 11-15 times within a year whilst almost none of their vehicles breakdown more than that amount. From table 10, it is evident that 68 vehicles breakdown 11 to 15 times on the road whilst only 1 vehicle breakdown about 16 to 20 times per year. It is not surprising that the vehicles that experience about 16 to 20 times breakdown are 6 to

10 years old. This indicates that as vehicle age, they deteriorate and without regular maintenance will break down several times within a year.

Surprisingly, the study found out those vehicles that breakdown more frequently are below 5 years whilst those that experience less breakage are 11-15 years old. This indicates that users of relatively older vehicles maintain them than those whose vehicles are newer since they less encounter breakdown than the latter. This buttresses the fact that, drivers who use brand new vehicles do not visit mechanics for routine check-up and servicing than used vehicle drivers. Table 10 also reveals that more than three quarters of the vehicles used in Birim Central Municipal are less than 10 years which indicates that vehicles in the study area are more efficient and possible accidents might occur due mainly from human error.

5.8 Frequency of Vehicle Breakdown by Age of Vehicle in a Year

Table 10 implies that vehicles must be serviced regularly no matter its condition whether in perfect shape or not since there is a higher probability to trigger accidents when they break down on the road.

Similarly, the study revealed how effective drivers renew their vehicle paper and drivers licence. It was found out that almost all the drivers renew their vehicle papers and licence when they expire. However, results of the study as shown in table 11 indicate that most of the drivers renew their licence and papers on time. The study found out that, 41.25% of the drivers renew their papers on the day of deadline whilst 27.5% renew their before the stated deadline date. This indicates that almost three quarters of the drivers in the study area renew their paper to avoid payment of penalty and bribery on the highway. This also indicates that most drivers are more sensitive and law abiding since drivers are mandated to renew their papers before they expire.

However, the study found out that 31.25% of the drivers renew their papers after the deadline which could be due to poverty, ignorance and forgetfulness and long queues at the Driver Vehicle Licensing Authority (DVLA) centres.

5.9 Causes of Frequent Road Accidents in Birim Central Municipality

The study also assessed the causes of frequent vehicular accidents in Birim Central Municipality. Drivers, passengers, mechanics and vehicle owners who were sampled for the study have intimated the major cause of road accidents as highlighted in table 12.

The major causes of road accidents per the views of respondents in the study area includes attitude of drivers, road users and vehicle owners, illiteracy, bad nature of roads, and bad condition of vehicles among others. From table 13, it was found out that, the attitude of drivers, road users and vehicle owners is the major cause of road accidents in the Birim Central Municipal which account for 57% of road accidents. Respondents claimed that some drivers are overconfident and belief in themselves as good drivers and hardly accepts criticisms or advice from passengers. It was found out that some drivers who think good driving is all about awareness of car size and reaction to road conditions such as weather, road signs and anticipatory behaviour of other drivers hardly accept constructive criticism from passengers on their driving especially relating to speed and overtaking which results in preventable road accidents. Respondents also added that, some drivers are greedy and drive recklessly to overtake and pick passengers from bus-stops ahead who are supposedly to have been picked by leading vehicles. Also, respondents claimed that commercial drivers stop and pick passengers at unauthorised bus stops and obstruct oncoming vehicles. Moreover, the study found out that, some drivers intoxicate or drink drive which

reduce their coordination level and commit errors that causes accidents. Also, it was revealed that drivers in the study area use cell phones while driving which distract their attention and commit driving error. Other attitude of drivers such as playing loud music, conversing with passengers, not wearing seatbelt, abusing traffic regulations are precursors for road accidents. Similarly, respondents claimed that other road users including pedestrians and cyclist cross at unauthorised places which offset driving and causes accidents. In addition, it was found out that commercial vehicle owners refuse to give money to drivers to maintain vehicles when they complain about mechanical faults and often postpone maintenance which breakdown and causes accidents.

Furthermore, findings from the study revealed that about 17% of the road accidents that occur in Birim Central Municipality are caused by bad nature of roads. Respondents claimed that major roads that link the towns in Birim Central municipal are worn out with interlocking potholes which offset driving. Also, it was found out that, roads linking the hinterlands are untarred which are dusty and makes visibility poor and causes avoidable accidents. Respondents also claimed that the untarred sub-roads easily flooded during the rainy season which impairs driving, causing slipping and colliding of vehicles. It was also uncovered that most of the streets particularly the major streets lack street lights, road marks and road signs which make driving difficult particularly at night which cause preventable accidents. Respondents claimed that sharp and winding curves including climbing lanes, bridges, cattle crossing signs are not instigated on the roads to warn drivers ahead of time and causes road accidents. However, it was found out that the few road signs in the municipality are faded and sometimes covered by store sheds, sign boards, umbrellas, and bushes.

Moreover, a major cause of road accidents in Birim Central Municipal is bad condition of vehicles. This factor accounts for 11% of road accidents in the study area

as stated in table 12. Respondents emphasised that due to the low standard of living in the municipality, drivers and vehicle owners are unable to afford new or home used cars and often buy rusty cars. The study also found out that vehicle owners and drivers do not maintain their vehicles periodically either due to lack of funds, mistrust and greediness. Respondents claimed that vehicles that are in bad condition often spoil on the road at vantage points which causes traffic and preventable accidents.

In furtherance, another major cause of road accidents in Birim Central Municipality is illiteracy of drivers. From table 12, it is clear that 9% of the road accidents that occur in the study area are due to illiteracy. It was uncovered that most of the drivers particular the commercial drivers in the municipality are school drops and illiterates who hardly comprehend traffic regulations and obey road signs. With reference to table 3, it was found out that the most commercial drivers than private or non-commercial drivers cannot read and write and if education is highly important in reducing accidents then it presuppose that commercial drivers are more prone to road accidents.

Upon further probe, respondents who were sampled for the study intimated the extent to which illiteracy causes road accidents which is presented in table 13. From table 13, it was found out that, more than half of the total respondents representing 56% of agree that illiteracy causes road accidents whilst 44% claimed otherwise. In addition, it is evident from table 14 that more commercial drivers encounter road accidents than private or non-commercial drivers. From table 14, it was revealed that 19 commercial against 3 private drivers have been engaged in either one or two fatal road accidents in the current year. This could buttress the fact that, illiteracy plays a role in these occurrences.

Lastly, in assessing the causes of road accidents in Birim Central Municipal, it was found out that 5% of the accidents are caused by other factors such as attitude of security personnel on the road, passengers and mechanics. The study found out that, some security personnel on the road who are responsible for checking vehicles, licences and drivers collect bribes for offenses committed and allow unhealthy vehicles and unscrupulous drivers to ply the road which causes accidents. It was also intimated that some drivers have allies in the security personnel who allow them go free upon reckless driving or faulty vehicles. Aside this, respondents also purveyed that some attitude of passengers contribute to road accidents in the study area. Respondents claimed that some passengers insult drivers to upset them who fail to concentrate on the driving and lead to avoidable accidents. Also it was revealed that some passengers instigate drivers to speed up whilst others engage them in lengthy conversations that retard their efficiency and commit driving error. Also, the study found out that, some vehicle mechanics fail to service vehicles well and sometimes buy fake or repair and fix worn-out parts which needed to be replaced completely which leads to frequent vehicular breakdown and possible accidents.

CHAPTER SIX: SUMMARY, CONCLUSION AND RECOMMENDATIONS

Introduction

This chapter summarizes the findings and analysis of the results of this study. The relationship between the stated objectives of the research and the findings of the analysis is established in this chapter. Based on the findings, recommendations to address the causes of frequent vehicular accidents are made to ensure reduction in this menace.

6.1 Summary

The general objective of the study is to investigate the educational background of drivers on their performance in the frequent incidence of vehicular accidents in Birim Central Municipality.

In order to investigate this, the researcher used the descriptive research design to explain the phenomena as they naturally transpire during the study period without any form of intervention from the researcher (Bernard, 2005). Based on data collection, the study adopted a purely quantitative research approach. The study used purposive sampling to randomly select drivers, drivers' mates, car owners and vehicle mechanics (fitters) to respond to questionnaire. Simple descriptive tools such as frequency charts and tables were used to explain the findings from the questionnaires.

This study has exposed the educational levels of drivers with regards to their literacy level. The study found out that, majority of the drivers particularly commercial drivers had no formal education. It was revealed that nearly half of the commercial drivers who took part in the survey were illiterate which have serious implication on the frequency of road accidents. The study found out that semi-illiterates drivers who ended their education at the basic level drove commercial vehicles and cannot

decipher traffic regulations as to when and how they apply. The study found out that most private drivers are learned and might apply traffic regulations thoroughly than their commercial counterparts although the educational level of drivers reduces significantly from primary to tertiary levels. The study found out that, twice as much as commercial driver are private drivers who can read and write. Also, it was revealed that almost all of the drivers who cannot read and write are commercial drivers. The study revealed that most illiterate drivers have plans to enrol in an adult education whilst a significant proportion had no intentions of enrolling now or later in life.

The study also found out that, less than half of the drivers attended driving school for their driving lessons whilst majority did not. It was revealed that, majority of the drivers in Birim Central Municipality learned driving from unqualified persons such as friends, family members who might not have in-depth knowledge in both the practical and theoretical aspects of driving. The study revealed that a significant size of the drivers who attend driving schools did not graduate successfully and might have obtained their driving license from dubious means. Moreover, the study found out that, majority of drivers do not know the highway codes and therefore drive recklessly whilst who know cannot read and apply them. Also, the study exposed that most drivers have high knowledge in road signs and legal obligations whilst a significant number had less knowledge in that regard who sometimes skip them and causes possible threat to other road users.

The study has also come to understand the efficiency of drivers in the performance of their duty. The study found out that cars are the most frequently used vehicle aside buses and trucks. It was also found out that, more private drivers use cars and trucks than commercial drivers who mostly drive commercial buses. The study indicated that routine vehicle maintenance partly determines the quality and efficiency of a driver. It

was found out that most drivers conduct regular vehicle check-up such as check of engine oil, brake fluid, water, tire pressure, leakage from engines and positions of mirrors before starting their engines although a significant percentage of them do not. The study found out that, most drivers do not check their vehicles before starting the engines due to lateness to work, ignorance, and laziness among other reasons. Both commercial and non-commercial drivers who are late for work often skip preliminary vehicular checks to catch up time. It was found out that some drivers particularly illiterates do not know the merits of conducting daily or regular vehicle checks. The study found out that vehicular checks are necessary and avoid possible break down on the road which could cause road accidents. It was unveiled that, some drivers feel reluctant to check their vehicles due to tiredness, stress and boredom from work and home whilst others have stopped since they don't often see faults when they check. It was found out that, visiting the mechanic shop for routine maintenance is determined by the type of vehicle used. The study exposed that drivers who drive used-cars undertake more daily, weekly and monthly vehicular maintenance than those who bought their vehicles brand new. The study revealed that, almost all drivers experience vehicle breakdown irrespective of the newness or age of the vehicle. It was found out that, most drivers' vehicles breakdown about 11 to 15 times within a year or more. The study found out that, as vehicle age, they deteriorate and without regular maintenance experience several break down within a year. It was revealed that drivers who use brand new vehicles or newer vehicles do not visit mechanics regularly for routine serving and encounter numerous breakdowns. The study revealed that, most vehicles in the study area are less than 10 years old and as such more efficient and frequent accidents may be attributable to human error than mechanical fault. It was evident that more than half of the vehicle breakdown results into accidents. It was

found out that most drivers renew their vehicle papers and licence on time before they expire and avoid payment of penalty and bribery on the highway. It was revealed that, more than quarter of the total drivers renew their papers after the deadline due to poverty, ignorance, forgetfulness and long queues at the Driver Vehicle Licensing Authority (DVLA) centres.

The study also assessed the causes of frequent vehicular accidents in Birim Central Municipality. It was found out that, the major causes of road accidents in the study area includes attitude of drivers, road users and vehicle owners, illiteracy, bad nature of roads, and bad condition of vehicles among others. The study unveiled that some drivers are overconfident and hardly accepts criticisms or advice from passengers particularly regarding their speed and overtaking. It was revealed that some drivers are greedy and overtake recklessly to pick passengers who are supposed to have been picked by leading vehicles. Moreover, the study found out that, some drivers drink and drive which reduce their coordination level and commit errors that cause accidents. It was also exposed that, some drivers hang on phones while driving, abuse traffic regulations and often engage in prolong chats with passengers who retard their performance and commit errors. In addition, it was found out that commercial vehicle owners refuse to maintain their vehicles and keep on postponing servicing which lead to vehicular breakdown and avoidable accidents.

The study found out that, major roads that link the towns in Birim Central municipal are worn out with interlocking potholes whilst feeder roads connecting the hinterlands get flooded and become difficult to plough. It was also found out that road signs and streets lights are not enough and make visibility poor particular at night and impede driving. It was revealed that rusty vehicles that often spoil at vantage points of the road causes traffic and preventable accidents. It was found out those illiterate drivers

who cannot read and understand road signs abuse traffic regulations and offset others drivers. The study found out that, some security personnel collect bribes for offenses committed and allow unhealthy vehicles and unscrupulous drivers to plough the road which causes accidents. It was also intimated that some drivers have allies in the security personnel who allow them go scout free upon reckless driving or faulty vehicles. Also it was revealed that, some passengers instigate drivers to speed up than normal. Also, the study found out that, some vehicle mechanics fail to service vehicles well and sometimes buy fake or repair and fix worn-out parts which ought to be replaced completely which leads to frequent vehicular breakdown and possible accidents.

6.2 Conclusion

The study has come to understand the educational background of drivers on their performance in the frequent incidence of vehicular accidents in Birim Central Municipality. In order to investigate this, three objectives were formulated.

When investigating the first objective, the study found out that most drivers' particularly commercial drivers have no formal education. Nearly half of the commercial drivers are illiterate which have serious implication on the frequency of road accidents. Semi-illiterates drivers mostly drive commercial vehicles and do not know traffic regulations as to when they are applied. Most private drivers are learned and apply traffic regulations thoroughly their counterpart. The educational level of drivers reduces significantly from primary to tertiary levels. Most illiterate drivers have plans to enrol in an adult education whilst a significant proportion had no intentions of enrolling. Fewer drivers attended driving schools for their driving lessons whilst majority learned driving from unscrupulous or informal persons who

might lack in-depth knowledge in driving. Some drivers who attended driving schools did not graduate successfully and obtained driving license from dubious means. Moreover, majority of drivers do not know the highway codes whilst those who know cannot read and apply them. Also, most drivers have high knowledge in road signs and legal obligations whilst a significant number had less knowledge in that regard and sometimes skip them causing possible treat to other road users.

In assessing the second objective, it was found out that routine vehicle maintenance partly determines the quality and efficiency of drivers. Most drivers conduct regular vehicle check-up before starting their engines although some drivers do not. Drivers who do not check their vehicles before starting engines are due to lateness to work, ignorance, and laziness. Drivers who are late for work often skip preliminary vehicular checks to catch up time. Drivers particularly the illiterates do not know the merits of regular vehicle checks. Vehicular checks are necessary and avoid possible break down on the road. Drivers sometimes feel reluctant to check their vehicles due to tiredness, stress and boredom from work and home. Some drivers have stopped checking their vehicles since they don't often see faults. Visiting the mechanic shop for routine maintenance is determined by the type of vehicle used. Drivers who drive used-cars undertake more vehicular maintenance than otherwise. All drivers experience vehicle breakdown irrespective of the newness or age of the vehicle. Most drivers experience vehicle breakdown about 11 to 15 times within a year. As vehicle age, they deteriorate and without regular maintenance experience break down several times within a year. Drivers who use brand new vehicles or newer vehicles do not service them and encounter most breakdowns. Most vehicles in the study area are less than 10 years and are more efficient therefore frequent accidents may be attributable to human error than mechanical fault. More than half of the vehicle breakdown results

into accidents. Most drivers renew their vehicle papers and license on time before they expire although some wait after they are expired.

When investigating the third objective, it was found out that the major causes of road accidents include attitude of drivers, road users and vehicle owners; illiteracy; bad nature of roads; and bad condition of vehicles. Drivers who are overconfident hardly accept criticisms from passengers regarding their speed and overtaking. Greedy drivers overtake recklessly to pick passengers supposedly to have been picked by leading vehicles. Drivers drink and drive and commit errors. Also, some drivers hang on phones while driving, abuse traffic regulations and often engage in prolonged chats with passengers. Commercial vehicle owners frequently postpone which leads to vehicular breakdown and avoidable accidents. Most major roads in Birim Central are worn out with interlocking potholes. Feeder roads connecting the hinterlands often get flooded making it difficult to be ploughed. Fewer road signs and street lights are installed on the road which reduces visibility particularly at night. Rusty vehicles often spoil at vantage points and cause traffic and preventable accidents. Illiterate drivers who cannot read and understand road signs abuse traffic regulations and offset other drivers. Some security personnel collect bribes for offenses committed and allow unhealthy vehicles and unscrupulous drivers to plough the road. Some drivers have allies in the security personnel who are allowed to go freely upon reckless driving or faulty vehicles. Also, some passengers instigate drivers to speed up than normal. Also, some vehicle mechanics fail to service vehicles well and sometimes buy fake or repair worn-out parts which ought to be replaced completely.

6.3 Recommendations

Based on the outcome of the research the following are recommended.

1. Drivers must do well to always examine the condition of their vehicles particularly their tyre pressure, brake lights, water, engine and hydraulic oil before starting their engines for use to avoid possible breakdown.
2. Drivers and vehicle owners should always service their cars regularly and repair any mechanical fault immediately or when they suspect any fault.
3. The Driver and Vehicle Licensing Authority (DVLA) in collaboration with driving schools should establish an informal training centre to train prospective drivers effectively on the road signs, and traffic regulations before issuing them with driving license. Again, the DVLA should expand the driving tests to include new driver's behaviour during emergencies, and their hazard perception and also insist on literacy as part of requirements for the acquisition of driving licence.
4. The MTTU should also employ a taskforce to conduct regular vehicle checks to see if they are indeed roadworthy and punish drivers with faulty vehicles.
5. The DVLA should resource enough to open more local branches in each municipality to facilitate renewal of roadworthy and driving license.
6. Security personnel and traffic wardens should arrest and prosecute traffic offenders without collecting bribes from culprits.
7. Drivers should avoid unnecessary over speeding and overtaking on the road and observe traffic regulations at all times.
8. Adoptions of rules of road alongside law enforcement policies should include drink-driving laws, setting of speed limits, and speed enforcement systems such as speed cameras.

9. The government should provide good roads, fill potholes and erect road signs where necessary to caution drivers earlier to avoid reckless driving. Also, locations that look dangerous or a prone to accidents should be provided with road markings and conspicuous road signs to warn drivers and road users.
10. The Ministry of Transport, and Road and Highways Authority and all other stakeholders should educate the masses especially passengers to desist from engaging with drivers lengthy chat and pressurising drivers to over speed.



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APPENDIX

UNIVERSITY OF EDUCATION, WINNEBA-KUMASI
DEPARTMENT OF MECHANICAL TECHNOLOGY EDUCATION
Questionnaires for drivers, drivers' mates, car owners, mechanics and
passengers

This questionnaire is designed to gather data on the frequent incidence of vehicular accidents at the Birim Central Municipality in the Eastern Region of Ghana. The data gathered from this survey will be used to analyse the research topic stated above. This research work is being carried out by a Master of Technology (M-Tech) student of the above mentioned department of the University of Education, Winneba-Kumasi.

Birim Central Municipality was chosen for the study and you are kindly requested to provide responses to the questions to enable the researcher address the problem under study.

Please, all information is for academic purposes only and will be treated with the utmost confidentiality.

Please, tick [] the appropriate response and fill in the space where possible.

Thank you

Section A

Demographic information

1. **Age:**

18-20 years	<input type="checkbox"/>	21-25 years	<input type="checkbox"/>	26-30 years	<input type="checkbox"/>
31-35 years	<input type="checkbox"/>	36-40 years	<input type="checkbox"/>	41-45 years	<input type="checkbox"/>

2. **Gender:**

<input type="checkbox"/> Male	<input type="checkbox"/> Female
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3. **Marital Status:**

<input type="checkbox"/> Married	<input type="checkbox"/> Single
<input type="checkbox"/> Divorced/Separated	<input type="checkbox"/> Widow

3. **Occupation:**

<input type="checkbox"/> Driving	<input type="checkbox"/> Drivers' mate
<input type="checkbox"/> Passenger (road user)	<input type="checkbox"/> Other: (specify).....

4. **Occupational experience:**

1-5 years	<input type="checkbox"/>	6-10 years	<input type="checkbox"/>	11-15 years	<input type="checkbox"/>
16-20 years	<input type="checkbox"/>	21-25 years	<input type="checkbox"/>	Other: (specify)	

5. **Educational level:**

<input type="checkbox"/> No formal education	<input type="checkbox"/> Primary School
<input type="checkbox"/> Junior High School (J.H.S)	<input type="checkbox"/> Middle School
<input type="checkbox"/> Technical School	<input type="checkbox"/> Vocational School
<input type="checkbox"/> Polytechnic	<input type="checkbox"/> University

6. **Do you have a driving license?**

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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If yes, please specify the grade/type:.....

Section B (For Drivers Only)

Educational levels of drivers with regards to literacy and driving

7. **Have you been enrolled in any form of non-formal education?**

Yes No

8. **Are you able to read and write?**

Yes No

9. **Have you had any form of training or apprenticeship?**

Yes No

10. **If yes, in what vocation did you have the training?**

Driving Auto-mechanic (‘fitting’)
 Auto-Electricals Electricals
 Carpentry Tailoring/Dressmaking
 Masonry Hairdressing
 Other (specify):

11. **Did you graduate from the training or apprenticeship?**

Yes No

12. **How many years did you spend on the training?**

1 year 2 years
 3 years Other (specify):

13. **Are you conversant with the Ghana Highways Code?**

Yes No

14. **What is your level of knowledge of legal obligations of a driver?**

Very High Low
 High Very Low

15. What is your level of knowledge of the theoretical aspects of how the vehicle work and simple routine checks?

<input type="checkbox"/> Very High	<input type="checkbox"/> Low
<input type="checkbox"/> High	<input type="checkbox"/> Very Low

16. What is your level of knowledge of driving in traffic?

<input type="checkbox"/> Very High	<input type="checkbox"/> Low
<input type="checkbox"/> High	<input type="checkbox"/> Very Low

17. What is your level of knowledge of maintenance and mechanical principles?

<input type="checkbox"/> Very High	<input type="checkbox"/> Low
<input type="checkbox"/> High	<input type="checkbox"/> Very Low

18. What is your level of knowledge of road signs and symbols?

<input type="checkbox"/> Very High	<input type="checkbox"/> Low
<input type="checkbox"/> High	<input type="checkbox"/> Very Low



Section C (For Drivers and Drivers' mate and Car owners)

Efficiency of drivers in the performance of their duty

19. Do you drive?

Yes

No

20. If yes, do you drive a private or commercial vehicle?

Private

Commercial

21. If commercial, are you a driver or a driver's mate?

Driver

Driver's mate

22. What form of vehicle do you work in?

Car

Bus

Truck

Other (specify):

23. How many vehicles have you used in your driving profession?

One

Three

Two

Other (specify):

24. What is the age of your vehicle?

1-5 years

6-10 years

11-15 years

16-20 years

Beyond 20 years

25. Was your vehicle purchased brand new or 'home used'?

Brand new

'Home used'

26. What type of routine/periodic maintenance schedule is carried out on

your vehicle?

Daily maintenance

Weekly maintenance

Monthly maintenance

27. How often do you have vehicle breakdown on the road in a year?

1-5 times

6-10 times

11-15 times

16-20 times

Beyond 20times

28. Have you ever had road accident as a driver?

Yes

No

29. If yes, how many road accidents have you experienced as a driver?

One

Two

Three

Four

Five

Beyond 5

30. How many fatal road accidents have you experienced as a driver?

One

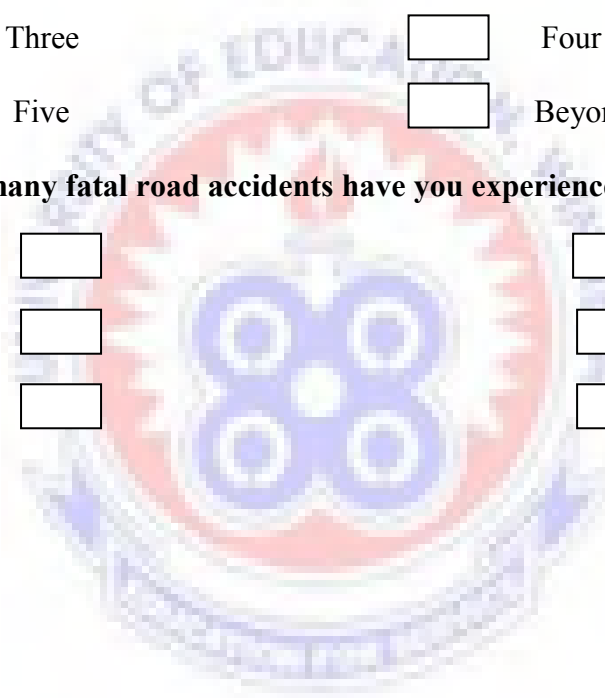
Two

Three

Four

Five

Beyond 5



Section D

Effects of education on the performance of drivers

31. What is the major cause of road accidents?

- Attitude of drivers Bad nature of road
 Bad condition of vehicles

32. What is the educational level of most commercial drivers?

- Very High Low
 High Very Low

33. What is the educational level of most non-commercial drivers?

- Very High Low
 High Very Low

34. Which of these record the most incidences of road accidents?

- Commercial Drivers Non-commercial Drivers

35. Does level of education affect the incidence of road accidents?

- Yes No